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THE RIGHT TO REFUSE UNSAFE WORK: ARBITRATION AND LABOUR RELATIONS BOARD DECISIONS

by

JOHN MARK LAWRENCE HARCOURT ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY

in

INDUSTRIAL RELATIONS

FACULTY OF BUSINESS

Edmonton, Alberta

Fall 1995

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The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled THE RIGHT TO REFUSE UNSAFE WORK: ARBITRATION AND LABOUR RELATIONS BOARD DECISIONS submitted by JOHN MARK LAWRENCE HARCOURT in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY in INDUSTRIAL RELATIONS.

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This thesis is dedicated to Sondra and Tristan Harcourt, my wife and son, without whose patience, love, and encouragement this thesis would not have been possible.

ABSTRACT

This study examines 272 arbitration and labour relations board decisions involving employees who have been disciplined for exercising their right to refuse unsafe work. Its premise is that boards treat the right to refuse unsafe work as a secondary right over which the right of management to manage takes priority. Results of the study confirm that the right to refuse is a very restricted right to the extent that employees must satisfy many rigid conditions to qualify for protection from discipline. These conditions are based on the notions that health and safety are properly management's prerogative and that obedience to management authority is essential to efficient production. Several implications of the findings are outlined for employees, management, policy-makers, and researchers at the end of the thesis.

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Introduction

This study focuses on how arbitration and labour relations boards resolve the contradiction between the workers' right to refuse unsafe work under the occupational health and safety legislation and management's right to manage under common law. This contradiction is rooted in the contrasting roles workers assume under the two different bodies of law. The common law requires obedience from workers so that management can oblige them to work in consideration for their pay (Atleson 1983; Christie, England, and Cotter 1993). As a result, workers are expected to act subordinate and deferential whenever management exercises unilateral authority over day-to-day business decisions. The occupational health and safety statutes have the potential to disturb this division of powers by guaranteeing workers rights to know about hazards in their workplaces, participate in occupational health and safety committees, and refuse to perform unsafe work (Commerce Clearing House Canadian Ltd. 1991). These rights thus encourage workers to use initiative and demonstrate autonomy in ways which may subvert organizational command hierarchies.

An inevitable clash ensues when a worker declines to follow orders and managers respond by first demanding obedience and then by disciplining the recalcitrant employee. An employee can appeal this disciplinary action to either an arbitration or labour relations board, depending upon the jurisdiction, which is legally empowered to resolve this conflict in rights (C.C.H. Canadian Ltd. 1991). Decisions made by these tribunals define and clarify the two sets of rights so as to minimize their contradiction. This process could lead to a broadening of the right to refuse which guarantees workers protection from employer retaliation in a wide variety of potentially dangerous circumstances. Alternatively, it may produce a narrowing of this right which leaves many workers vulnerable to discipline whenever they refuse to work for safety reasons. A greater threat of discipline will discourage workers from exercising their rights, leaving them more exposed to workplace dangers.

Canadian workers could benefit from the protection of a broadly defined right to refuse unsafe work. More than one million of them are injured per year (Labour Canada 1992: 22), eight hundred fatally (Labour Canada 1992: 22). Perhaps thousands more die from diseases originating in, or exacerbated by, workplace hazards that are as yet unidentified or poorly understood (Aykroyd 1980: 27). This problem is particularly acute because of the proliferation of chemicals in Canadian industries (Reasons, Ross, Paterson 1981).

The need for a solution to Canada's occupational health and safety problems appears all the more urgent, given the superior health and safety records of other economically developed countries (International Labour Organization 1994: 1001-1019). The U.S.A. has industrial fatality rates half as high as Canada's, despite the industrial and cultural similarities of the two countries. Moreover, this pattern of lower American rates holds true for all sectors except financial services (Digby and Riddell 1986: 290-1). Other nations compare even more favourably with Canada: Britain, Denmark, Sweden, and Japan report industrial fatality rates that are less than a third of Canadian rates (I.L.O. 1994: 1001-1019). Trends in injury rates show that Canada's record shows few absolute and, compared to other countries, no relative improvements over time (I.L.O. 1994: 1001 -1019). In fact, reported disabling and nondisabling injury rates have remained stable over the past decade, even though death rates have declined (Labour Canada 1992: 22). These high human losses caused by occupational hazards are compounded by major economic losses. The direct costs of occupational health and safety associated with claims for lost pay, medical attention, workers' compensation, and disability pensions have been estimated at 2.3% of G.N.P. (Brody, Rohan, and Rompre 1986: 549, 565). The indirect costs entailed in repairing or replacing damaged equipment and materials, hiring and training substitute workers, and losing production time may be three to six times greater (Brody, Rohan, and Rompre 1986: 551-2).

Traditional Approaches to Occupational Health and Safety

Traditional Canadian approaches to occupational health and safety have emphasized the health and safety regulation of work methods, workers' compensation (W.C.) for working days lost due to injury, and compensating wage premiums paid through the labour market. This combination of approaches has provided insurance and compensation for taking risks but has not encouraged prevention (Mendeloff 1979; Viscusi 1986). It allows management to retain authority over occupational health and safety and yet protects them from many of the social and economic costs of hazardous working conditions (Mendeloff 1979; Viscusi 1986).

1. Compensating Wage Premiums

In an ideal labour market, workers would be fully compensated for assuming all risks of injury and death. Risk-averse workers would refuse to work in hazardous firms, unless they received adequate wage premiums. Unsafe companies would have to pay these differentials in order to attract a workforce. Many firms would nevertheless find it cheaper to invest in health and safety measures than to pay the higher compensation levels. Consumers would also find it cheaper to purchase the products of less hazardous firms as long as the higher wages were reflected in higher prices. Market mechanisms would thus provide strong incentives for health and safety and an adequate means of indemnifying workers who took on occupational risks. The safety/pay combinations offered in these circumstances would be optimal, because they would reflect workers' preferences for both personal health and income. Marginal improvements in safety beyond this point would not be worth the marginal costs in terms of the pay sacrifices required (Viscusi 1986).

In reality, the labour market fails to provide sufficient wage premiums to compensate for risks and motivate the prevention of hazards. Estimates of wage premiums for the U.S. economy are typically low, averaging only one to four percent of total payroll costs (Smith 1979: 346). Premiums paid to compensate for disabling injuries are generally very small, zero, or even negative (Smith 1979: 344-345). Pay differentials for fatal injuries are generally positive but vary substantially, so that one life is worth as little as

$497,000 and as much as $16,172,000 in 1988 U.S. prices (Leigh 1991: 382). Furthermore, premiums are usually observed across industries (Smith 1979; Viscusi 1978) but not across occupations (Thaler and Rosen 1975; Brown 1980; Leigh 1991), possibly reflecting differences in unionization rather than danger.

One explanation for the paucity of wage premiums focuses on the imperfections in the workers' knowledge of job hazards. Managers and engineers who design and oversee production operations may know about the risks, but they may choose not to disclose this information to the workforce who would use it to demand costly pay increases. Alternatively, employers may find it prohibitively expensive to collect, analyze, and disseminate information on occupational health and safety problems, particularly if considerable scientific study is involved.

Workers can partly offset their informational disadvantages by accumulating knowledge of hazards while on the job (Viscusi 1979a; Viscusi and O'Connor 1984). Employment with a firm provides opportunities for observing physical conditions, witnessing injury events, and questioning managers and co-workers about the occupational health and safety situation (Viscusi 1979a; Viscusi and O'Connor 1984). Once apprised of the risks involved, workers can threaten to quit as a way of pressuring managers to provide compensating pay increases (Viscusi 1979a; Viscusi and O'Connor 1984). However, just five percent of workers are fully informed of the injury risks associated with their work (Schilling and Brackbill 1987).

There are many reasons why workers may never learn how much danger is present in their jobs, even after extensive job experience. Injury risks that are frequent and have immediate and visible consequences are likely to be observed and accurately assessed. Other risks that are infrequent or have delayed and largely indiscernible consequences are likely to be overlooked (Rose-Ackerman 1988). For this reason, workers may understand the obvious risks of, for example, cuts and bruises while remaining ignorant of the dangers of hidden diseases like cancer. Even if dangers are visible and have immediate consequences, many young and inexperienced workers may only discover the hazards in their jobs when they receive fatal or disabling injuries (Leigh 1991). Differences in worker susceptbilities to hazards also pose a problem in determining personal risks (Rose-Ackerman 1988). In Canada's asbestos industry, for instance, smokers have been nine times likelier to contract cancer than nonsmokers (Reasons, Ross, and Paterson 1981: 43). Workers in similar situations may mistakenly believe that conditions are safe, because their co-workers are resistant to the hazardous conditions and thus exhibit few signs of ill-health or sickness. These perceptual difficulties are compounded by ongoing technological changes that introduce new hazards and eliminate old ones, rendering the past incidence of injuries a poor predictor of future incidence (Rose-Ackerman 1988).

Imperfect information may hamper the accurate assessment of specific job hazards, but workers can still distinguish more from less dangerous jobs (Robinson 1987; Viscusi 1979; Viscusi and O'Connor 1984). For this reason, danger pay should normally be substantial, even if it is loosely connected to particular risks. Yet, wage premiums associated with nonfatal injuries are small or nonexistent, especially across occupations (Leigh 1991). The problem in many cases is that workers understand the dangers of their jobs but cannot credibly threaten to quit and thereby force managers to pay hazard differentials or alleviate unsafe conditions (Robinson 1987).

John Stuart Mill was the first to recognize that workers in unsafe jobs frequently lack the general education, specific skills, and social backgrounds required for alternative employment (Mill 1848). Quitting under these conditions normally means prolonged unemployment and severe poverty, so workers stay with their firms and voice their discontent in other ways (Brody 1988; Dwyer 1983; Robinson 1987). Many take collective action against their employers by joining unions, staging strikes, and filing grievances (Brody 1988; Robinson 1987). Others individually shirk their duties by taking long rest breaks or being chronically absent (Allen 1981a; Allen 1981b; Brody 1988; James 1987; Quinlan 1980; Robinson 1987). However, these manifestations of dissatisfaction and frustration are not sufficient to induce major improvements in safety or pay (James 1987; Robinson 1987). Managers know they have a captive workforce and only compromise enough to contain the conflicts so that production is maintained (James 1987). They also use their operational flexibility to keep skill and training requirements low, enabling them to employ disadvantaged workers at low wages (Robinson 1988). The extensive supervision and limited decision-making associated with unsafe jobs also allow managers to monitor and control the workers so that they cannot disrupt production (James 1987; Robinson 1988)

2. Health and Safety Regulation

The regulatory approach to health and safety does not depend upon worker mobility or knowledge to function effectively. It relies instead on governments to legislate either performance or, more typically, specification standards that are enforced by safety inspectors who can levy fines for violations. Specification standards stipulate the means for improving health and safety in terms of the machinery and equipment employers must buy, and work practices they and their employees must follow (Viscusi 1986). These standards apply to such things as sanitation, ventilation, heating and lighting (Digby and Riddell 1986). Performance standards outline goals for hazard reduction and leave employers free to choose the least costly means of ensuring compliance (Viscusi 1986).

Regulation has not had a major impact on occupational health and safety, despite the proliferation of standards (Mendeloff 1979; Smith 1976; Viscusi 1979b; Viscusi 1986). Aggregate accident rates in the U.S. have declined modestly by two or three percent, equal to a reduction of 40,000 injuries, as a result of the 1970 Occupational Safety and Health Act (Mendeloff 1979: 115). In Canada, enforcement of regulations has not lowered the incidence of injuries caused by asbestos or vinyl chloride (Dewees and Genesove 1988). Accident rates in Quebec fell only slightly from 1983 to 1987 as inspection rates rose (Lanoie 1992b). Regulation has, however, had more dramatic effects on the incidence and severity of specific types of injury. Californian fatality rates associated with explosions, electrical mishaps, and rollovers of earth-moving equipment dropped steeply during the 1970s (Mendeloff 1979: 115). In a New York study, the frequency of injuries that involved being struck by a machine was 15% lower in the six years after the 1970 Occupational Safety and Health Act than in the six years before (Curington 1987: 64). The severity of injuries where someone was caught in a machine also declined in 6 out of 18 industries analyzed (Curington 1987: 67). The cumulative impact of these changes is, nonetheless, very small, because 'struck by machine' and 'caught in machine' injuries are respectively 3.5% and 14.8% of all injuries (Curington 1987: 67). The improvements registered in these injury categories are also masked by deteriorations in others, including injuries due to overexertion (Curington 1987).

Health and safety regulations are largely ineffective, because they pertain to relatively few hazards. For instance, the Occupational Safety and Health Act in the U.S.A. covers only 15% of the machines used in the workplace (MacAvoy 1977: 249). Moreover, specification and performance standards mainly address the dangers of technologies and not those of rapid production pace, inadequate staffing, poor training, repetitive work, and infrequent maintenance (Mendeloff 1979; Viscusi 1986). Yet, these and other causes account for many workplace injuries (Dawson, Clinton, Bamford, and Willman 1985; Dwyer 1983; Nichols 1975; Wrench and Lee 1982), so that plants using very similar technologies often have widely different health and safety records (Grunberg 1983; Novek 1992). For these reasons, safety investigations show that only 10-15% of workplace injuries originate with violations of regulations (Mendeloff 1979: 86).

Even when hazards are covered by the regulations, violations are rarely detected. Half the violations leading to injury are temporary events, frequently associated with machinery malfunctions, and would therefore not normally be discovered in a routine inspection (Mendeloff 1979). Ongoing violations may also remain undetected for extensive periods, because inspections are infrequent. The probability of a visit from an inspector in the U.S. is only one in 200 or once every two centuries (Viscusi 1986: 254).

The chances of being investigated are higher in Quebec but are still only one in ten or once in ten years (Lanoie 1992a: 69). The possibility of inspection is even lower in small- and medium-sized businesses outside the closely monitored manufacturing and construction sectors (Mendeloff 1979). A visit is, however, no guarantee that a regular violation will be noticed. If an inspector is unfamiliar with some of the thousands of regulations, he or she may not know that a hazard is contravening a standard. If the inspector has little time, he or she may not have the opportunity to assess all hazards and determine whether there are any violations, especially in a large plant. For these reasons, inspectors typically issue only two or three violations per inspection (Mendeloff 1979; Viscusi 1986).

Catching the violations does not ensure that they won't happen again, since the negative consequences of disobeying the law are ordinarily trivial in relation to the costs of compliance. For instance, inspectors very seldom issue stop-work orders for violations, so there are few costly production disruptions. In addition, the penalties for contravening the regulations are normally miniscule, averaging only $57 in the U.S.A. during 1983 (Viscusi 1986). Fines for repeated violations are higher at more than $1,000, but follow -up inspections occur in only 23% of such cases (Mendeloff 1979: 88). Many inspectors avoid using their punitive powers, preferring instead to issue warnings and mediate disputes (McKenzie and Laskin 1987; Ontario Ministry of Labour 1980; Tucker 1988).

3. Workers' Compensation

Workers' Compensation, like health and safety regulation, is designed to encourage employer efforts at hazard prevention. The system functions by funding earnings-related benefits for injured employees through employer payroll premiums. It follows that if more employees receive benefits and for longer periods, employers may have to pay higher premiums and earn lower profits. This gives employers the incentive to decrease workplace dangers that might injure employees and prompt them to claim Workers' Compensation benefits. These incentives are strongest when the employer's health and safety record is closely linked to the total benefits paid to its employees, and when these benefits are closely related to the premium rates levied. However, these connections are often weak in which case Workers' Compensation provides little impetus for hazard prevention.

Employees with occupational injuries or diseases are not always eligible for W.C. benefits. They cannot, for instance, get compensation for minor injuries that involve no time off work. Neither can they claim for injuries or diseases which cannot be traced to their employers. It can also be difficult to qualify for benefits when a disability like a back problem is difficult to diagnose and hence easily disputed by an employer. Even when employees are granted benefits, employers do not bear all the costs of the injury or disease. The employee must absorb some of the income losses, since the benefits replace only part of previous earnings. Other costs, including the unquantifiable costs of pain and suffering, are totally borne by the employee and his or her family and friends. For all these reasons, Workers' Compensation does not completely indemnify employees for all the losses they suffer as a result of occupational injury and disease.

Even when employees are compensated for an occupational accident, the link between benefits paid and employer costs may remain tenuous. Most employers belong to a class of firms which together share the costs of compensable injuries and diseases occurring within the group (Lanoie 1992a). Only large firms that pay substantial premiums are self-rated in the sense that benefits received by the firm's employees are financed solely by the same firm's premiums (Lanoie 1992a). Large firms thus have some incentive to prevent hazards. Small- and medium-sized firms, on the other hand, face no major financial inducements to reduce injuries, because the other firms in the same class accrue most of the premium savings of one firm's successes at improving health and safety.

Health and Safety and the Right to Refuse Unsafe Work

The right to refuse unsafe work has several potential advantages over the three traditional approaches to health and safety. The foremost of these is a broad coverage of hazards to the extent that any danger a worker identifies can be the subject of a refusal. Temporary and permanent dangers associated with staffing levels, maintenance problems, and production speed may thus serve as the basis of a refusal. The right to refuse has the further advantage of not depending upon the frequency or thoroughness of official ministry of labour inspections to detect hazards. Instead, every worker is a potential inspector when he or she observes and responds to unsafe conditions occurring in his or her job. Work refusals also offer a proactive rather than a reactive approach to occupational health and safety that allows workers to escape exposure to hazards, until management has eliminated the dangers or an inspector has investigated and declared the work safe. Moreover, refusals can result in costly work stoppages that managers may try to avoid by instigating preventative measures before the fact or undertaking rapid corrective action after the fact.

The right to refuse unsafe work does have shortcomings as a method for combatting health and safety problems. One of these is the workers' ignorance of their statutory rights and consequent reluctance to either refuse unsafe work or to invoke the disciplinary protections and corrective procedures provided by the legislation (Walters and Denton 1990; Walters and Haines 1988). A survey of 311 industrial workers in steel, carpet, can, brake, and rubber plants revealed that 31% of them had no knowledge of their rights under the legislation, even though 85% of these individuals believed that their jobs were hazardous and 57% had observed disease and injury symptoms in their fellow workers (Walters and Haines 1988: 413). Results from the same survey also showed that only 1% of these factory workers had invoked their statutory right to refuse unsafe work in the past year, despite the fact that 40% of them had informally refused unsafe work (Walters and Haines 1988: 414) and, in many cases, expressed fears of management reprisals (Walters and Haines 1988: 420).

Worker ignorance is a problem that can be surmounted through educational and information campaigns. However, workers may remain reluctant to refuse unsafe work as long as managers can retaliate by disciplining them and can expect arbitration and labour relations boards to uphold these actions on appeal. For this reason, many workers may continue to unwillingly do dangerous work, even when they are fully aware of their rights.

The present study seeks to determine whether, in fact, arbitration and labour relations boards actually uphold management's disciplinary decisions and under what conditions. As a result, it focuses on the process of how the workers' right to refuse unsafe work is reconciled with management's right to manage. The criteria used in delimiting the two sets of rights are analyzed to determine whether this reconciliation generally favours the interests of one party or the other.

The findings of the study should have several practical implications for unions, workers, and managers. They should show whether workers can rely on the right to refuse unsafe work and so avoid possible injury and death. If disciplinary penalties are normally overturned except in very particular conditions, workers may refuse to perform unsafe work in the confidence of knowing their jobs are protected. In these circumstances, no major revisions in the statutory right to refuse would be necessary. Unions could recommend work refusals to their members as an effective means of averting workplace dangers. Managers could be advised to refrain from disciplining any employee who exercises his or her right to refuse, given the low probability of having any penalty sustained by an arbitrator. On the other hand, if disciplinary penalties are upheld in most circumstances, workers should remain fearful of reprisals in the event they refuse unsafe work. For this reason, injury rates may remain high, despite the possibilities for prevention. Unions could be advised to seek alternative remedies to workplace health and safety problems. Managers might have reason to feel less concerned that the right to refuse undermines their authority than they did when this right was first enacted (Walters 1983).

Background / Literature Review

Few studies have examined management's control rights in the context of refusals to perform unsafe work (Walters 1991). Most of these studies have been qualitative and, as is typical for legal investigations, were based on a small number of cases (e.g., Leslie 1982). As a result, they do not show whether arbitration and labour relations boards generally reconcile the conflict in workers' and management's rights in favour of one party or the other. However, other studies of grievance arbitration cases indicate that arbitrators generally favour the employer in disputes over control rights and favour the employee or union in disputes over pay and benefits. For instance, Gilson and Gillis (1987) discovered that management win rates were higher than 50 percent for job property rights disputes centred on seniority, transfer, job posting, and layoff and recall, and lower than 50 percent for financial disputes centred on wages and benefits. This pattern of wins was confirmed in other studies. Zirkel (1983) found that employers win most promotion and transfer cases, but unions win most fringe benefit cases. In their research on Ontario arbitration awards, Gandz and Warrian (1977) noted that union win rates of 29 and 31 percent were particularly low for seniority and overtime cases, respectively. Holmes, Rogow, and Maynes (1990) reported a majority of management wins in job posting, contracting out, seniority and promotion, hours worked, and layoff and recall cases, and a majority of losses in only wages and job classification cases.

Arbitrators' support for management control rights originates in their high regard for efficiency (Bankston 1976; Gross 1967), and in their assumption that efficiency requires management control rights (Gross 1967; Gross and Greenfield 1985). These values are not peculiar to arbitrators, inasmuch as they only reflect the "prevailing ideas at the basis of the contemporary order" (Gross 1967: 55). The mutual acceptance of these common value orientations is manifested in precedents which serve to guide future arbitral decisions (Gross 1967). Gross (1967) examined subcontracting and out-of-unit transfer cases from the U.S. Labor Arbitration Reports in his efforts to detect a common value orientation favouring management control rights. He discovered that arbitrators generally inferred management's rights, since collective agreements rarely specified them in detail. As a result, contract ambiguities left management with unilateral authority over contracting out, subject only to the duty to preserve the integrity of the union and the terms and conditions of the collective agreement. Managers could thus legitimately contract out to more *efficient* firms with similar or higher wage rates and yet lower product prices. Arbitrators would not, in contrast, allow outsourcing to lower-wage firms because this would circumvent the higher wage rates negotiated by the union. These arrangements placed managers under no attendant obligation to maintain employment in the bargaining unit, unless the union's existence was thereby threatened. Gross's (1967) findings for out -of-unit transfer cases were somewhat different. In these cases, work was typically reassigned from union to nonunion workers using the same tools and materials within the same plant. As a result, management's right to transfer could not be predicated on an efficiency rationale, except in those circumstances where some change in technology was involved. Union rights to retain the work within the bargaining unit were therefore ordinarily upheld.

Conceptual Framework and Hypotheses

Studies of the right to refuse unsafe work examine some of the factors which arbitration and labour relations boards consider in upholding management's right to manage over the workers' right to refuse unsafe work. The present study draws on this previous research to fashion explanatory variables for a quantitative analysis involving a large sample. The variables examined reflect the same board concerns for authority and efficiency previously identified in studies of disputes over management's and workers' rights. Work refusals are thus seen as challenges to the legitimate exercise of management power (Walters 1991). The insubordination aspects of each case are accordingly emphasized in the awards (Gross and Greenfield 1985). Past evidence of obedience is also considered to determine whether the refusal forms part of a behaviour pattern that undermines management's authority (Squire 1992; Walters 1991). The employee's health and safety concerns, in contrast, cannot singly justify a refusal in the mind of the arbitrator (Gross and Greenfield 1985). For this reason, management's disciplinary penalties are ordinarily upheld, unless there is some clear indication that management has neglected its customary responsibility for health and safety as part of normal working conditions (Gross and Greenfield 1985). A grievance is also more likely to be sustained when management has precipitated or prolonged a refusal by acting in an unprofessional manner without regard to the orderly operation of the firm. In this analysis, the preservation of management authority as a bulwark for organizational efficiency is the central theme. Health and safety are secondary issues which receive attention after authority and efficiency concerns are addressed first (Gross and Greenfield 1985).

1.Work refusals as insubordination

Obedience has long characterized the employee's master-servant relationship with the employer (Atleson 1983). The common law courts have institutionalized this form of domination by sanctioning the summary dismissal of any employee guilty of insubordination (Christie, England, and Cotter 1993). To prove this offense, the employer need only show that the employee received a clear, direct order from a management representative, understood the consequences of disobedience, and yet wilfully disobeyed the order anyway (Brown and Beatty 1993; Christie, England, and Cotter 1993; Palmer 1978).

The right to refuse unsafe work under common law serves solely as a health and safety defense to a charge of insubordination (Brown 1983; Gross and Greenfield 1985). It allows the employee to sue the employer for pay-in-lieu-of-notice through the civil courts when the employee is wrongfully dismissed for refusing to perform unsafe work (Brown 1983; Christie, England, and Cotter 1993; Nash 1983). However, no right to reinstatement is provided and damages are limited to as little as one or two weeks wages for junior or unskilled workers (Brown 1983; Christie, England, and Cotter 1993; Nash

1983). Workers are thus given little incentive to risk losing their jobs by refusing to carry out hazardous work. As a result, the employers' right to obedience clearly precedes and dominates the workers' right to refuse unsafe work at common law.

The common law dominance of management's right to obedience has been reproduced in union-management relations (Atleson 1983). The 'work now, grieve later' rule, established in the 1944 Ford Motor Company arbitration case in the United States, obliges employees to follow management's directives, no matter how unsavory, and postpone their complaints for resolution through the grievance procedure (Ford Motor Co. 1944, 3 L.A. (B.N.A.) 779, Shulman). Arbitrator Shulman defended this rule as necessary to the continuity and stability of production, which he maintained was the primary purpose of work. Nevertheless, Shulman allowed a right to refuse unsafe work as an exception to the 'work now, grieve later' rule, because he recognized that the reactive, remedial character of grievance arbitration is unsuited to recompensing unrectifiable kinds of harm, including injury and death. As in common law, the arbitral right to refuse thus remains inseparable from the greater disciplinary context which emphasizes insubordination: the right to refuse unsafe work is the *exception* and the right to obedience is the *rule*.

Canada's occupational health and safety laws make no explicit mention of insubordination in their statutory rights to refuse unsafe work (C.C.H. Canadian Ltd. 1991). Nevertheless, the arbitrators who enforce these statutory rights can be expected to import insubordination concepts directly from the arbitral jurisprudence. Labour relations boards may also rely on this jurisprudence, because disciplinary and health and safety matters were previously outside the boards' legal jurisdiction. Furthermore, managers are likely to employ insubordination arguments in support of their disciplinary decisions, thereby obliging arbitrators and boards to address the insubordination question. Boards may therefore reassert management's right to obedience, despite its absence from the legislation.

Management's right to obedience is the root of its authority. If employees refuse to obey orders, management cannot effectively exercise its other control functions. In the absence of control and order, arbitrators fear that there cannot be efficient production (Bankston 1976; Gross 1967; Stein 1977). On this basis, one would expect arbitrators to impose severe penalties for insubordination as compared to other offenses. Yet, research on discharge and discipline cases indicates that arbitrators are no harsher on grievors guilty of insubordination than on grievors guilty of, for example, poor work performance or attendance (Bemmels 1988a; Bemmels 1988b; Bemmels 1988c; Bemmels 1990a; Caudill and Oswald 1992; Eden 1993). In contrast, many studies have found that arbitrators treat dishonesty, theft, and assault with greater severity than other offenses (Bemmels 1988c; Bemmels 1990b, 1991a; Eden 1993). Nevertheless, one study of suspension cases showed that insubordination was treated more harshly than all other offenses except dishonesty and theft, at least to the extent that employer penalties were sustained (Bemmels 1990b, 1991a).

Only one study has focused on the arbitration of insubordination cases involving the right to refuse unsafe work. In this study, Gross and Greenfield (1985) performed a qualitative, legal analysis of 154 U.S. cases published by Commerce Clearing House and by Labour Arbitration Reports from 1945 to 1984. They found that 153 of these 154 situations were viewed as insubordination cases with health and safety as only a mitigating factor. In only one of 154 cases was the employer actually obliged to show that the workplace was, in fact, safe. The remaining cases proceeded with the insubordination issue addressed first. This placed the onus on management of proving that the grievor had received a direct order from a management representative, that the grievor had been advised of the consequences of disobeying, and that the grievor had refused to obey. If management successfully discharged this relatively light burden of proof, the health and safety issue was then addressed. The onus then shifted to the grievor who had to prove that he had a legitimate health and safety concern for refusing to perform the work.

Insubordination was thus treated as the starting point for analyzing these cases. Health and safety concerns were of secondary importance and the heavy onus of proving them was left to the grievor.

The arbitrators in Gross and Greenfield's study (1985) emphasized obedience in the belief that preserving management authority was indispensable to maintaining efficient production. This assumption was echoed in sentiments such as: "no company could produce anything without the right to tell a man what to do and when to do it" (Gross and Greenfield 1985: 656). Most arbitrators emphasized how work refusals could undermine management and create chaos in the workplace. Few expressed any concern for workers' health and safety or management's responsibility for establishing dangerous working conditions. For these reasons, some penalty against the grievor was upheld in two thirds of all the cases analyzed.

The arbitral jurisprudence reviewed in Canadian labour law texts is consistent with Gross and Greenfield's findings. Palmer (1978) and Brown and Beatty (1993) both document the use of an insubordination mode of analysis in right to refuse unsafe work cases. They show that these cases are treated like all other discipline cases in which an offense has been allegedly committed. The employer must accordingly show that the grievor is, in fact, guilty of insubordination. One can therefore predict that:

H1: the arbitration or labour relations board will decide on a harsher (more lenient) penalty when the employee is found 'guilty' ('not guilty') of insubordination.

2. Health and safety as management's prerogative

The common law gives managers jurisdiction over health and safety as part of their right to control working conditions (Leslie 1982; Swinton 1982). Working conditions and their associated industrial hazards result predominantly from management's choices of machinery, equipment, materials, plant layout, work practices, and production pace rather than from voluntary workers' behaviour (Ashford 1976; Codrington and Henley 1981; Dwyer 1983; Nichols 1975; Novek 1992; Quinlan 1988; Reasons, Ross, and

Patterson 1981; Sass 1987; Sass and Crook 1981; Tombs 1991; Wrench and Lee 1982). Health and safety are thus inextricably linked to the main functions of management and to the major factors affecting productivity. This means that an emphasis on health and safety could jeopardize productivity levels. A slower work pace on an assembly line, for example, could reduce the number of strain injuries but at a cost of decreased output. Whenever productivity and health and safety clash in this fashion, managers, as agents of the owners, are unlikely to opt for better health and safety. Hazard prevention is only likely to receive priority when it saves more in workers' compensation premiums, pension disability payments, and other expenses than it costs in decreased productivity (Digby and Riddell 1986). The implication is that upholding refusals in all but these last set of circumstances undermines the firm's competitive position. For this reason, arbitrators and boards refrain from questioning the employer's judgments on health and safety (Gross and Greenfield 1985). Challenges to management's authority remain improbable, unless the danger is either 'abnormal' for the work or proven with reference to objective evidence or the reasonableness of the employee's alleged health and safety concerns (Brown 1983; Gross and Greenfield 1985; Leslie 1982).

The arbitral jurisprudence and occupational health and safety laws restrict potential challenges to the employer's jurisdiction over health and safety. The 1973 Steel Company arbitration case requires that the employee 'reasonably believe' that following orders was 'unusually' dangerous (Steel Co. of Canada Ltd. 1973, 4 L.A.C. (2d) 315, Johnston). The occupational health and safety laws also mandate that the employee have 'reasonable cause to believe', 'reasonable grounds to believe', or 'reasonable and probable grounds for believing' that working was 'abnormally', 'imminently', or 'unduly' dangerous (C.C.H. Canadian Ltd. 1991). Nevertheless, the provinces of Manitoba, New Brunswick, Nova Scotia, and Prince Edward Island place no statutory limitations on the degree of danger needed to justify a refusal, but Ontario allows refusals, prior to an investigation by management, where the employee initially has 'reason to believe' that his or her work is hazardous (C.C.H. Canadian Ltd. 1991). At least one arbitrator has decided that this provision enables employees to refuse work on the basis of some subjective belief or genuine fear that working is dangerous (Beachvilime Ltd. 1981, 1 L.A.C. (2d) 22, Palmer).

Past studies suggest that boards often apply stricter requirements than those outlined in either the legislation or arbitral jurisprudence to justify countermanding management's disciplinary penalties. A subjective standard of proof, whereby the grievor need only demonstrate that he or she honestly felt endangered, is rarely sufficient by itself to guarantee full exoneration (Fortado, Travis, and Jennings 1990; Gross and Greenfield 1985; Leslie 1982). At a minimum, most boards demand that the grievor's subjective belief be 'reasonable' (Fortado, Travis, and Jennings 1990; Gross and Greenfield 1985; Leslie 1982) to the extent that an 'average' worker with comparable training, education, and experience to the grievor would have also perceived the danger in doing the grievor's work (Pharand v. Inco Metals Co. 1980, O.L.R.B. Rep., 981). Some boards are even more stringent in that they require objective proof of danger to justify altering management's disciplinary decisions. In these cases, the incontrovertible evidence of a doctor's testimony, an inspector's report, a scientific study, or a scientific measurement is often needed to stop boards from automatically deferring to management on health and safety matters (Fortado, Travis, and Jennings 1990; Gross and Greenfield 1985; Leslie 1982).

In their study of U.S. arbitration cases, Gross and Greenfield (1985: 650-1) found that 42% of arbitrators specified an objective standard of proof to qualify for the Shulman exception to the 'work now, grieve later' rule. Examples of objective evidence included scientific measurements, agency inspections, and arbitrator observations of the workplace. In 49% of the cases, arbitrators announced an intention to employ a 'reasonable belief' standard of proof, but actually relied on objective evidence to substantiate the grievor's claims in half of these (Gross and Greenfield 1985: 653). A *de* *facto* objective standard of proof was thus used in 66% of all cases, leaving only 25% to be decided on a genuine 'reasonable belief' standard (Gross and Greenfield 1985: 653). In these 'reasonable belief' cases, the arbitrators only sought to determine whether the facts and circumstances known to the grievor at the time of the refusal would have persuaded an average, reasonable person, possessing similar experience, training, and physical attributes as the grievor, to refuse to perform the work. A subjective, 'good faith' standard was only involved in nine percent of the decisions (Gross and Greenfield 1985: 653). In these cases, the grievor had only to show that he sincerely and honestly believed that the refused work was hazardous. However, in all but one of these cases, the arbitrators solely employed this standard to justify a reduced penalty rather than to absolve the employee of guilt. Gross and Greenfield thus discovered that arbitrators avoid questioning management's judgment on health and safety concerns, except when the objective evidence clearly shows that management has failed to provide a safe working environment.

Gross and Greenfield (1985) also examined other types of cases to determine whether arbitrators followed a consistent approach to safety. They discovered that arbitrators varied their emphasis on safety in accordance with management's priorities. When management showed a strong concern for safety by establishing safety rules, arbitrators vigorously enforced these rules even if they were only loosely related to workplace hazards. In one case, the arbitrator accepted management's justification for excluding all women under age fifty from dangerous occupations because these women ***might*** later become pregnant and expose their unborn babies to harm (Gross and Greenfield 1985: 664). When management cited safety reasons for dismissing disabled employees, arbitrators normally sustained their decisions. Conversely, when employees questioned the safety of small crew sizes, arbitrators rarely supported their concerns unless there was objective evidence of danger. Arbitrators thus recognized an injury prevention purpose to management safety initiatives which they were unwilling to extend to workers refusing to perform unsafe work or grieving small crew sizes. For this reason, employees won fewer than 25% of these safety-related cases (Gross and Greenfield 1985: 664-6).

Leslie (1982) analyzed nine selected Canadian labour relations board and court decisions, including six from Ontario, two from Saskatchewan, and one from the federal jurisdiction. She found that these boards and courts largely followed the arbitral jurisprudence in defining the seriousness of the danger and the standard of proof required to qualify for protection from management's disciplinary actions. In defining standard of proof, no board accepted the subjective, 'good faith' judgment of the complainant as sufficient. In Miller v. C.N.R., the Canada Labour Relations Board relied on the objective evidence of a co-worker's death to uphold the complainant's refusal to operate a forklift until it had been inspected (Miller v. C.N.R. 1980, 2 C.L.R.B. Rep., 344). In the Queen v. Intercontinental Packers, a Saskatchewan court similarly employed an objective test in deciding that cold conditions in a meatpacking plant had not caused injuries or deaths in the past and so were not dangerous in the present (Queen v. Intercontinental Packers, Provincial Magistrate's Court, Saskatoon, Saskatchewan, 23 November 1976 (unreported)). Four cases showed evidence of a 'reasonable belief' standard, while the remaining three cases had an indeterminate standard. For instance, in the Queen v. Hertz Northern Bus, a Saskatchewan court determined that a school bus driver had 'reasonable grounds to believe' that her inability to reach the pedals was a danger when driving (Queen v. Hertz Northern Bus, Provincial Magistrate's Court, Saskatoon, Saskatchewan, 25 May 1976 (unreported); Queen v. Hertz Northern Bus, District Court, Saskatoon, Saskatchewan, 30 September 1976 (unreported)). In Pharand v. Inco, the Ontario Labour Relations Board also relied on a 'reasonable belief' standard in deciding that an average person would have acted as the grievors did in refusing to work in a copper refining furnace where pieces of brick roof threatened to fall and splash workers with molten copper (Pharand v. Inco 1980, O.L.R.B. Rep., 981). Leslie also found that the Ontario Labour Relations Board employed a 'reasonable belief' standard in Martin v. General Motors

(Martin v. General Motors 1980, O.L.R.B. Rep., 700) and Bonin v. Inco. (Bonin v. Inco. 1980, O.L.R.B. Rep., 836), but no discussion of these cases was provided.

The boards and courts in Leslie's study generally assessed dangers as serious only when they had exceeded the 'normal' level expected in the employee's workplace. In the Queen v. Intercontinental Packers, a Saskatchewan court denied the complaint of discriminatory discipline because the cold, wet, and drafty conditions in the employee's meatpacking plant were 'normal' dangers (Queen v. Intercontinental Packers, Provincial Magistrate's Court, Saskatoon, Saskatchewan, 23 November 1976 (unreported)). In the Queen v. Hertz Northern Bus, a Saskatchewan court sustained the complaint because the employee had been forced to drive a different school bus from her regular vehicle, one that posed 'unusual' dangers because its seat dimensions were inappropriate for her small size (Queen v. Hertz Northern Bus, Provincial Magistrate's Court, Saskatoon, Saskatchewan, 25 May 1976 (unreported); Queen v. Hertz Northern Bus, District Court, Saskatoon, Saskatchewan, 30 September 1976 (unreported)). In Miller v. C.N.R., the Canada Labour Relations Board decided that the complainant was in 'imminent' danger from malfunctioning forklifts, but only because a co-worker's death had shown that the workplace was 'unusually' hazardous (Miller v. C.N.R. 1980, 2 C.L.R.B. Rep., 344). No discussion of the seriousness of danger was provided in the Ontario cases, perhaps reflecting the absence of these statutory constraints on Ontario's right to refuse.

Leslie's (1982) findings are similar to those of Fortado, Travis, and Jennings (1990) in their study of thirty American discharge cases that involved various defences against the charge of insubordination. As in Leslie's study, arbitrators commonly employed either an objective or 'reasonable belief' standard of proof to assess the validity of the grievor's refusal. Arbitrators also refrained from overturning management's penalties, unless the dangers the grievor faced were 'abnormal' to the work.

In sum, past studies confirm that arbitrators have a high regard for management's authority over health and safety in the workplace. Management's right to establish 'normal' working conditions and take appropriate safety precautions is generally respected. Intervention on behalf of the employee is only likely in extreme circumstances when the objective evidence suggests the potential for harm or when the danger is unexpectedly serious. One can thus predict that:

H2: the arbitration or labour relations board will decide on a harsher (more lenient) penalty when it finds obvious indications that management has (has not) abused its customary jurisdiction over health and safety as part of normal working conditions.

3. Obedience patterns in workplace relations

A work refusal is normally a clear repudiation of the employee's duty to obey the employer under the common-law employment relationship (Christie, England, Cotter 1993). However, one incidence of disobedience does not definitively establish that the employee is forever unwilling to submit to management's authority. Behaviours either subsequent or prior to the work refusal could demonstrate a general pattern of subservience, punctuated by only the one brief rupture in an otherwise harmonious and thus redeemable relationship. Canadian labour relations and occuaptional health and safety statutes allow arbitrators to consider these factors in determining whether to reinstate employees with back pay or to substitute lesser penalties (Brown and Beatty 1993; C.C.H. Canadian Ltd. 1991). In labour relations law, the practice of reducing penalties to more accurately reflect the severity of an offense and any mitigating factors is fully institutionalized through the principle of 'just cause' (Brown and Beatty 1993).

A pattern of obedience can be determined in several ways. Arbitrators or labour relations boards can refer, as is done in traditional arbitration cases, to general evidence of good behaviour, such as an unblemished work record or long years of service. Alternatively, they may allude to the respect the employee has shown management during or after the refusal in their descriptions of his polite manner or willingness to apologize. They may also appreciate the employee's attempts to clearly communicate his health and safety concerns to management as is his or her legal duty in arbitral jurisprudence (Steel

Company of Canada Ltd. 1973, 4 L.A.C. (2d) 315, Johnston) and in occuaptional health and safety law (C.C.H. Canadian Ltd. 1991).

Only Walters (1991) has examined the influence of general obedience factors on arbitrators' decisions involving the right to refuse unsafe work. She performed a qualitative analysis of 36 Ontario Labour Relations Board cases heard during the 1980s. In her study, the boards were more likely to overturn management's initial discipline when the employee had shown deference to management authority. As an example, workers who showed respect for the employer through their manner at the hearing were more likely to have their complaints sustained. Those who had not challenged management authority before and after the work refusal were also more likely to have their complaints sustained. In contrast, employees who had a poor work record of bad relations with management were less likely to win their cases. Employees who had been involved in disputes or disagreements with management were also less favourably treated by boards. The right to refuse unsafe work was thus conditional upon due deference to management authority.

Leslie (1982) has also found that boards scrutinize the employee's relationship with management to determine whether protection from discipline is warranted in right to refuse cases. She has intimated that boards are particularly wary of ulterior motives for a right to refuse. In particular, the refusal should not involve an attempt to challenge management authority. A poor work record of past offenses and a hostile manner when communicating health and safety concerns to managers are seen as deliberate efforts to undermine the employer's rights. In their study of U.S. arbitration cases, Gross and Greenfield (1985) also found that boards frequently doubted the honesty of a refusal because of the arrogant or combative manner involved in comunicating it to management.

Other scholars have examined the impact of general obedience factors on arbitral awards covering all kinds of discipline cases. Results have shown that boards do account for the general context of workplace relations in their decisions to fully or partially reinstate grievors. Research on the effects of lawyers on arbitration decisions in Newfoundland reveals that a record of related offences reduces the probability of a sustained grievance, after controlling for other factors (Thornicroft 1994). Bemmels' study (1988b) of grievor gender effects in British Columbian discharge decisions for 1977 to 1982 controlled for the influence of related and unrelated offenses in the grievor's work record and for a general category of mitigating factors. He found that related offenses in the grievor's work record increased the probability of more severe penalties. In a similar study of American discharge decisions, arbitrators were more lenient when the employee had an unblemished work record and more severe when the employee had a work record of related offenses (Bemmels 1988c). Arbitrators were also less harsh when any one of several mitigating factors was present in the case (Bemmels 1988c).

Research on U.S. suspension cases for 1976 to 1986 confirms these findings, although mitigating factors and a work record of related offenses had no effect on the arbitrators' awards (Bemmels 1990b, 1991a). In contrast, an analysis of Albertan discharge cases for 1982-1984 recorded no statistically significant effects associated with either the grievor's prior work record or years of service (Ponak 1986, 1987). However, this study involved a small sample and no multivariate analysis with a range of control variables. Rodgers and Helburn (1985) also examined a small sample of discharge cases, but they found that the grievor's seniority was positively associated with reinstatement. A study of discharge adjudication decisions in Canada's federal jurisdiction showed that a good work record, an absence of premeditation, and a demonstration of remorse all helped reduce the chances of a sustained discharge, whereas years of service had no impact on adjudicators' decisions (Eden 1993). Bemmels (1991b) found that contextual factors associated with the grievor's work record affected arbitrators' attributions of causality for a hypothetical discharge case. When the case was manipulated to suggest that the grievor had committed similar offenses in the past, arbitrators were more likely to both blame the grievor and sustain a discharge or some penalty. However, when the case was manipulated to indicate that other employees had committed the same offense, arbitrators were less likely to both blame the grievor and sustain a discharge or some penalty.

Studies of suspension and discharge awards demonstrate that arbitrators are more likely to substitute lesser penalties for management's decision to discharge or discipline whenever there is strong evidence of a good work record or mitigating factors. These conclusions are also fully consistent with Canadian legal texts which document the importance of mitigating factors in arbitrators' decisions to reduce penalties imposed initially by management (Brown and Beatty 1993; Christie, England, and Cotter 1993; Palmer 1978). One can therefore predict that:

H3: the arbitration or labour relations board will decide on a more lenient (harsher) penalty when it finds that the employee has (has not) demonstrated respect for, or obedience to, management authority through past or present behaviour.

4. Unprofessional management conduct

Management decisions can precipitate work refusals that would not have happened otherwise. In these circumstances, arbitration and labour relations boards may fault the employer for the employee's disobedience. As a result, management may forfeit its right to manage through professional misconduct and so no reconciliation of rights is required.

Managers can exhibit unprofessional conduct in ways already documented in the arbitral jurisprudence. They may issue conflicting orders that are disobeyed out of frustration (Palmer 1978). Alternatively, they may provoke insubordination by verbally abusing or taunting the employee or by violating the employee's rights as established in the collective agreement (Brown and Beatty 1993; Palmer 1978). In addition, they can tacitly approve the employee's disobedience through their inconsistent or lax disciplinary responses to similar incidents of insubordination in the past (Brown and Beatty 1993). Managers may also fail to respond to the employee's health and safety concerns as required under both the arbitral jurisprudence of the 1973 Steel Company case (Steel Company of Canada Ltd. 1973, 4 L.A.C. (2d) 315, Johnston) and the investigation procedures outlined in the occupational health and safety laws (C.C.H. Canadian 1994). One can therefore predict that:

H4: the arbitration or labour relations board will decide on a more lenient (harsher) penalty when it finds that management's conduct was unprofessional (professional).

Methods

Data Sources

The data for the study come from both arbitration and labour relations board awards from jurisdictions across Canada. Labour relations board decisions are limited to the federal, Quebec, Ontario, Manitoba, and Newfoundland jurisdictions, where boards have been empowered under the occupational health and safety legislation to hear right to refuse unsafe work cases from both organized and unorganized workplaces (C.C.H. Canadian Ltd. 1991). Quebec decisions are, however, excluded from the analysis because of the high translation costs involved. Decisions from three of the other four jurisdictions were found through official publications which either indexed or reproduced cases selected for their interest or importance. The time period surveyed begins with the year corresponding to the earliest case decided by each board and ends at December 31st, 1993. Subsequent awards from 1994 and later had not been published when the data were collected. The Canada Labour Relations Board cases, for example, are from Decisions Information, Volumes 39 to 87, 1978 to 1993. Decisions from the Public Service Staff Relations Board, where federal cases from the public sector are heard, were indexed in Public Service Staff Relations Board Decisions, Volumes 1 to 24, 1982 to 1993, and obtained from a publication of the same name or directly from the Board. The Newfoundland Labour Relations Board decisions were copied from the Report of the Newfoundland Labour Relations Board, 1984 to 1993. Published cases of the Ontario Labour Relations Board are from O.L.R.B. Reports, 1978 to 1993. All unpublished O.L.R.B. cases from 1988 to 1993 come from the Quick Law computer search system. Unpublished O.L.R.B. cases from years prior to 1988 were not available. The Manitoba Labour Board decisions were not listed in any official source, so the Manitoba Ministry of Labour located and supplied these cases.

The arbitration awards are from a variety of comprehensive and selective sources that are restricted to particular time periods and, in some instances, jurisdictions. Quebec awards were nevertheless not examined, again because of the translation costs entailed. Saskatchewan awards were also not part of the study, since the cases and an index of their contents were not available. The decisions of safety officers, who are empowered under Saskatchewan and Albertan laws to hear reprisal cases (C.C.H. Canadian Ltd. 1991), were also either unavailable or else too brief for analysis. British Columbian awards for 1987 to 1993 were identified through Western Legal Publication's B.C. Decisions Labour Arbitration, which has digests of all awards filed with the B.C. Ministry of Labour. The texts of these cases were provided by the publishing company, Canada Law Book. B.C. awards for 1966 to 1986 are from Western Labour Arbitration Cases, a selective compilation of full and abridged cases supplied by the Arbitration Branch of the Ministry of Labour as well as arbitrators themselves. The full texts of abridged cases with fewer than ten pages were obtained from the law library at the University of British Columbia. Ontario cases indexed in the comprehensive Monthly Bulletin, Volumes 8 to 15, 1979 to 1986, were acquired through the Ontario Office of Arbitration. References for the Albertan cases were found in Grievance Arbitration Cases in Alberta, 1970 to 1993, which covers all awards under the Alberta Labour Relations Code, Public Service Employee Relations Act, Technical Institutes Act, and Universities Act. Nova Scotian cases were listed in the Nova Scotia Compendium of Grievance Arbitration Decisions, 1978 to 1993, which includes all awards filed under the Trade Union Act. Copies of both Albertan and Nova Scotian decisions were provided by the respective ministries of labour. Select published cases from other jurisdictions were available in Labour Arbitration Cases, 1950 to 1993, Volumes 1 to 33. Select unpublished decisions were indexed in Canadian Labour Arbitration Summaries and ordered from Canada Law Book. Additional unpublished awards from Manitoba and New Brunswick and for 1985 to 1993 were acquired through the ministries of labour in these provinces.

Most of the biographical data for the control variables were obtained from the decisions. For example, the gender of the grievor/complainant and of the arbitration/labour relations board chair were usually apparent in the names reported at the beginnning of each case. However, some names went unreported and initials were often used instead of first names. In these circumstances, gender was determined from other sources, including legal directories, labour relations board newsletters, and arbitration society membership lists. Publications were also used to ascertain whether the main decision -makers or counsel for the parties had law degrees. To this end, editions of the Canadian Law List from as early as 1947 were examined to determine whether the names of the decision-makers and counsel matched those of practicing lawyers living in the same area at the same time. These findings were then cross-referenced against other legal directories such as the Ontario Lawyers' Phone Book 1994, the Alberta Legal Telephone Directory 1994-5, the Quebec Legal Telephone Directory, the Toronto Legal Telephone Directory, the British Columbia Legal Telephone Directory 1995, and the Atlantic Legal Telephone Directory 1992-3.

Sample

Data are available for 272 usable cases: 167 arbitration and 105 labour relations board decisions. The decisions date from as early as 1950 and as recently as 1993, allowing a comparison of awards both before and after the enactment of statutory rights to refuse unsafe work. Cases solely involving disputes over the jurisdiction of an arbitration or labour relations board were excluded from the analysis. Awards centred on compensation disputes following a work reassignment, layoff, or reinstatement were also excluded from the analysis. In addition, awards in which the outcomes had been predetermined through a collective agreement were not analyzed. Cases in which the grievance or complaint had been either dismissed due to a lack of timeliness or referred to some other decision-making forum were also not considered. Any other decision in which a board had refused to hear or reconsider the complaint or grievance were not included. Furthermore, disputes that had been settled by the parties rather than by a board were not discussed. In total, 56 cases were examined and then deleted from the study.

For the purposes of analysis, 'case' refers to each separate decision arrived at by a board. As a result, one award can contain more than one 'case' when two or more different situations warrant two or more different penalties. For example, two different refusal situations that result in two different penalties are considered two distinct cases, even when they involve the same person. However, only one case is recorded in those situations where several grievors have equally participated in a collective refusal. An award also contains just one case when a grievor receives a single penalty for refusing to perform the same work on several different occasions.

Dependent Variables

Arbitration and labour relations boards can choose one of three essential options in deciding a case where someone has been disciplined for refusing to work. They can uphold the original penalty imposed on the employee by management. They can instead exonerate the employee by overturning the penalty and awarding full reinstatement with back pay for any time spent off work. Alternatively, they can substitute a lesser penalty for the one decided by management, frequently by replacing a dismissal with a suspension or by shortening a suspension.

Three dependent variables were created to reflect the three basic decision choices. Data for these were collected by examining the outcomes of the arbitration and labour relations board awards. The first variable, PENALTY1, is a dichotomy between overturning (PENALTY1=1) and upholding (PENALTY1=0) the penalty management initially imposed on the employee. The second, PENALTY2, is a dichotomy between modifying (PENALTY2=1) and upholding (PENALTY2=0) the original penalty. For both variables, a decision to uphold a suspension thus receives the same categorical response as a decision to uphold a discharge. A decision to overturn a discharge similarly receives the same categorical response as a decision to overturn a reprimand. The severity of the initial penalty could, however, affect decisions: boards may prove more willing to overturn or reduce penalties which are harsh rather than lenient. The impact of

TABLE 1
VARIABLE DEFINITIONS

Decisions of arbitration and labour relations boards

PENALTY1	penalty overturned rather than upheld
PENALTY2	penalty reduced rather than upheld
ARBDAY	days in suspension awarded by board

Insubordination*

T_ORDER	ordered by management
F_ORDER	not ordered by management
T_CONSEQ	understood consequences of disobedience
F_CONSEQ	did not understand consequences of disobedience
T_DISOB	acted disobedient/insubordinate
F_DISOB	did not act disobedient/insubordinate

Health and safety as management's prerogative*

T_ABNORM	dangers abnormal for job, occupation, industry
F_ABNORM	dangers normal for job, occupation, industry
T_IMMIN	dangers imminent
F_IMMIN	dangers not imminent
T_OBJ	objective proof dangers were present
F_OBJ	no objective proof danger was present
T_REAS	reasonable cause to believe danger was present
F_REAS	no reasonable cause to believe danger was present
T_SUBJ	genuine concern for health and safety
F_SUBJ	no genuine concern for health and safety

Obedience patterns in workplace relations*

T_SERV	long service record with the employer
F_SERV	short service record with the employer
T_GOODREC	good work record with the employer
F_GOODREC	bad work record with the employer
T_REPORT	reported health and safety concerns to employer
F_REPORT	no report of health and safety concerns to employer

Unprofessional management conduct*

T_CA	employer violated employment contract
F_CA	employer did not violate employment contract
T_INCON	employer unfair in administering rules or procedures
F_INCON	employer fair in administering rules or procedures
T_FAIL	employer failed to respond to safety concerns
F_FAIL	employer responded to safety concerns

Controls

ARB	arbitration board made decision
ATTOR_G	employee(s) represented by attorney
ATTOR_R	employer represented by attorney
ATT_BOTH	interaction when both parties represented by attorney
F_GRIEV	employee(s) is female
F_DMAKER	board chairperson is female
D_ATTORN	board chairperson is an attorney
OHSA	decision in second/later year after OHSA proclaimed

TABLE 1 (Cntd.)
VARIABLE DEFINITIONS

Controls	
MGTDAY	days in suspension imposed by employer
M_SUSP	employee originally suspended by employer
M_DISMIS	employee originally dismissed by employer
DELAY	numbers of days from refusal to award
INTER	interaction of delay and original dismissal

* = findings made by a board concerning conditions at the time of the refusal

severity on board decisions is thus controlled by including dichotomous variables to indicate whether management initially decided on a dimissal (M_DISMIS) or a suspension (M_SUSP) for the employee.

Arbitration and labour relations boards may opt to award suspensions by either sustaining a suspension management has already imposed or by substituting a suspension as a less harsh alternative to another penalty like a dismissal. In all these cases, the possible outcomes involve more than simply upholding, reducing, or overturning a penalty, because suspensions can be any number of days. A continuous measure of the days in a suspension, as awarded by a board, is therefore examined in this study. The influence of severity in management's initial penalty is again controlled by including variables for both dismissal (M_DISMIS) and suspension length (MGTDAY).

Explanatory Variables

The explanatory variables provide measures of those concepts with hypothesized effects on arbitration or labour relations board decisions. Data for these variables were obtained by examining each arbitration or labour relations board award. The data are in a dichotomous format to indicate which explanatory conditions a board considered in making a decision. If the explanatory condition is recorded as present, it shows that the underlying explanatory concept was acknowledged in making the decision and is coded as '1'. If the explanatory condition is not mentioned, it shows that the underlying explanatory concept was not regarded as important and is coded as '0'. Contrary conditions of the same concept are also recorded using this method, in recognition that positive and negative findings can both affect the outcomes of the decision as compared to when neither is mentioned at all. The omitted category for all variables thus covers situations where no finding was made, and so all comparisons are made with this base case situation in mind. For instance, a board may have determined that the employee had a good work record (T_GOODREC=1), had a bad work record (F_GOODREC=1), or may not have addressed this issue at all (T_GOODREC=0 and F_GOODREC=0).

1. Insubordination

Insubordination is the failure to comply with the exercise of management authority. It is operationalized through six dichotomous variables, two for each of the three dimensions of insubordination. The first, second, and third variables respectively indicate that the board determined that the grievor or complainant: (1) had received an order or instruction from a management representative (T_ORDER); (2) was aware of the disciplinary consequences of disobeying (T_CONSEQ); and (3) did actually disobey, act insubordinate, or refuse to carry out the order (T_DISOB). The fourth, fifth, and sixth variables respectively show that the board acknowledged that the grievor or complainant: (1) had not received an order or instruction from a management representative (F_ ORDER); (2) was not aware of the disciplinary consequences of disobeying (F_CONSEQ); and (3) did not actually disobey, act insubordinate, or refuse to carry out the order (F_ DISOB).

2. Health and safety as management's prerogative

Health and safety as management's prerogative refers to the common law notion that management has basic responsibility for occupational health and safety as part of working conditions and employees therefore have no right to question this responsibility except in special circumstances. These special circumstances are measured using ten dichotomous variables for five different factors. The first and second variables show whether the board decided that the dangers the grievor or complainant allegedly feared were (T_ABNORM) or were not (F_ABNORM) abnormal, unusual, extraordinary, nonroutine, unnatural, or excessive for his or her work. The third and fourth variables record whether the board determined that the grievor or complainant was (T_IMMIN) or was not (F_ IMMIN) in imminent, unavoidable, immediate, or sudden danger of being killed or hurt. The fifth and sixth variables indicate whether the board found that there was (T_OBJ) or was not (F_OBJ) objective proof that the grievor or complainant was in danger at the time of his or her refusal to work. Objective proof, for the purposes of this study, includes inspector's reports, research studies, expert testimony, scientific measurements, company health and safety records, and physical evidence at the scene of the refusal. The seventh and eighth variables signify whether the board determined that the grievor or complainant could (T_REAS) or could not have (F_REAS) reasonably believed that he, she, or someone else protected by the legislation was in danger at the time of the refusal. In this research, a finding of reasonable belief, reasonable grounds to believe, reasonable cause to believe, or reasonable and probable grounds for believing can occur in three ways. First, the board can simply declare that there was or was not a reasonable belief, without evaluating the basis of this belief in depth. Second, the board can avoid any explicit mention of reasonableness, while still evaluating whether a perception of danger was justified by the circumstances, particularly when compared to the perceptions of other people in the vicinity at the time of the refusal. Third, the board can combine both these approaches, by declaring that there was or was not a reasonable belief and by evaluating the basis of this belief in the manner stated above. The ninth and tenth variables indicate whether the board found that the grievor or complainant had refused to perform work because of some genuine concern for health or safety (T_SUBJ) or because of some other motive (F_SUBJ).

3. Obedience patterns in workplace relations

Obedience patterns refers to those past and present aspects of the employment relationship between the grievor and employer which demonstrate harmony, loyalty, and respect for authority. These patterns are examined using six dichotomous variables, two for each of three different factors. The first and second variables indicate whether the board determined that the grievor or complainant did (T_SERV) or did not (F_SERV) have a long service record with the employer. The third and fourth variables signify whether the board found that the grievor or complainant did (T_GOODREC) or did not have (F_GOODREC) an unblemished disciplinary record with the employer. The fifth and sixth variables reveal whether the board concluded that the grievor or complainant had (T_

REPORT) or had not (F_REPORT) adequately reported his or her safety concerns to a management representative.

4. Unprofessional management conduct

Unprofessional management conduct refers to the arbitrary and prohibited exercise of managerial authority, with particular focus in this study on management actions that involve precipitating or mishandling employee refusals to perform unsafe work. Three dimensions of unprofessional management conduct are operationalized through six dichotomous variables. The first and second variables record whether the board determined that management had (T_CA) or had not (F_CA) violated the employee's contract. The third and fourth variables show whether the board decided that the rules and procedures of the firm had (T_INCON) or had not (F_INCON) been administered unfairly, inequitably, arbitrarily, or inconsistently in penalizing the grievor or complainant. The fifth and sixth variables indicate whether the board determined that management had (F_ FAIL) or had not (T_FAIL) either investigated a grievor or complainant's reports of danger or attempted to allay these concerns through discussion and explanation.

Control Variables

Previous studies of arbitration decisions suggest that extraneous factors, unrelated to the facts of each case, can affect the outcomes in an award. Most of these factors have been associated with either the characteristics of the arbitration process or the characteristics of the grievor or arbitrator. Variables for each type of characteristic are included in this study as controls. The information for these variables is from the awards, legal directories, membership lists of arbitration societies, and labour relations board publications. Additional variables are included to control for the severity of management's original penalty in affecting the board's decision.

1. Characteristics of the arbitration process

There are three characteristics of the decision-making process examined: the type of decision-making forum, attorney representation, and delay to the decision.

Decision-making forum

Decision-making forum refers to the quasi-judicial body which rendered the award in each case. Two types of decision-making forum, the arbitration board and labour relations board, are involved in this study and so it is necessary to control for fundamental differences between them. It is expected that arbitration boards (ARB) will make less lenient decisions than labour relations boards, because of the emphasis in the arbitral jurisprudence on discipline and insubordination rather than health and safety (Gross and Greenfield 1985).

Attorney representation

Attorneys are likely to offer advantages in presenting cases and cross-examining witnesses because of their in-depth knowledge of labour law. As a result, a party retaining an attorney's services is likely to improve its chances of winning. However, when both parties hire an attorney, both parties benefit from their advantages so that the chances of winning are not likely to improve for either side. One study (Block and Stieber 1987) with controls for grievor's gender, grievor's occupation, industrial sector, and type of offense confirms both of these effects. In contrast, two studies (Ponak 1986, 1987; Zirkel 1983) with no controls and another study (Thornicroft 1994) with controls for burden of proof required by the arbitrator, type of offense, union, industrial sector, job category, and disciplinary record all detect no impact from attorney representation. This study also measures the direct effects of attorney representation for either the employee (ATTOR_G) or employer alone (ATTOR_R) and the interaction effect of attorney representation for both employee and employer (ATT_BOTH). The probability of winning a case is expected to rise for the party that retains an attorney when the opposing party does not.

Delay from the refusal to the arbitration/L.R.B. decision date

Adams (1978) found that short delays were more likely than long delays to result in full or partial reinstatement. However, other researchers have not discovered any link between the award outcome and the time delay from the initial imposition of discipline to the hearing (Jennings and Wolters 1976; Ponak 1986, 1987; Rodgers and Helburn 1985). The delay between the refusal and decision, as measured in days (DELAY), is also examined in the present study to determine whether any relationship exists with the award outcomes.

2. Characteristics of the grievor and the arbitrator

Two characteristics of the employee and decision-maker are controlled for in this research. The first involves gender; the second focuses on whether the chair of the arbitration or labour relations board is a lawyer.

Gender

Several studies have investigated the impact of the grievor's gender on award outcomes. Most of these inquiries have found that women are treated more leniently than men (Block and Stieber 1987; Bemmels 1988a, 1988b, 1988c; Caudill and Oswald 1992; Caudill and Oswald 1993). Only Rodgers and Helburn (1985) found that women are treated more severely than men, but their research was based on only thirty seven cases from one industry. Other studies have investigated the relationship between award outcomes and different gender pairings of grievors and arbitrators. The majority of these studies have found no statistically discernible gender effects on arbitration decisions (Bigoness and DuBose 1985; Scott and Shadoan 1989; Zirkel 1993). However, Bemmels (1990b; 1991a) found that male arbitrators favour female grievors in awarding them full reinstatements rather than partial reinstatements. Bemmels (1990a) also showed that female arbitrators are more lenient than male arbitrators in giving suspensions, whereas Caudill and Oswald (1993) showed that female arbitrators are more severe than male arbitrators in deciding on partial rather than full reinstatements. The implication for this study is that female grievors (F_GRIEV) receive more lenient treatment than male grievors, but the outcome effects of decision-maker's gender (F_DMAKER) cannot be predicted in advance.

Decision-maker's education

An arbitrator's formal legal training could have inconsistent effects on his or her decsions, which are likely to vary directly with the circumstances of each case. For instance, if attorney arbitrators place a higher value on obeying the law than non-attorney arbitrators, they are likely to treat any party who has violated the procedural requirements of the health and safety statutes with greater severity. This could mean harsher penalties for the employee whenever he or she has not informed management of the health and safety reasons for the refusal. Alternatively, it could mean more lenient penalties for the employee whenever management fails to investigate his or her health and safety concerns.

Past investigations into the effects of arbitrator education on award outcomes has produced mixed results. Caudill and Oswald (1993), Deitsch and Dilts (1989), McCammon and Cotton (1990), Nelson and Curry (1981), and Thornicroft (1994) detected no statistically significant relationship between education, as indicated by the possession of a law or other type of degree, and arbitration decisions. Other studies have produced evidence of statistically significant, but contrary, effects. As an example, Thornicroft (1989) found that attorney arbitrators were more likely than non-attorney arbitrators to follow the civil law in applying a low standard of proof to find more often against the grievor. In contrast, Bemmels (1990a) found that arbitrators with Ph.D.s were less likely than arbitrators with masters or law degrees to reinstate grievors. Bankston (1976) showed that economist and attorney arbitrators are different in their support for market freedom as against legal authority, but he did not analyze the impact of degree on arbitration decisions. For this study, past investigations provide no definite clues concerning the likely impact of the decision-maker's legal education (D_ATTORN) on the award.

3. Severity of management's disciplinary penalty

Additional variables are needed to control for the severity of management's initial discipline in affecting award outcomes. In this case, the effects of an initial dismissal (M_

DISMIS) on the final decision are controlled through a dichotomous variable to indicate the presence of this factor. The impact of an initial suspension on the board's choice of penalty is measured in two ways. When analyzing determinants of board decsions regarding suspension length (ARBDAY), the initial suspension length imposed by management (MGTDAY) is controlled. When analyzing whether a penalty is either reduced or overturned, a dichotomous variable (M_SUSP) is used to indicate whether a suspension was the original type of penalty chosen by management.

When boards reduce dismissals to suspensions, they are likely to consider the duration of the delay from the time of the refusal to the time of the decision in determining an appropriate suspension length. To otherwise ignore the delay would force boards to award back pay, and this would probably seem inappropriate in the absence of a full exoneration for the alleged offense. For these reasons, a variable (INTER) is included to control for the interaction effects of an initial dismissal penalty in combination with the delay on a board's choice of suspension length.

4. Occupational health and safety legislation

A variable (OHSA) is included to control for the decision impact of the occupational health and safety laws, above and beyond any effects already captured through other independent variables. The main justification for this variable is that the health and safety focus in the legislation may affect decisions by causing subtle shifts in attitudes that predispose boards toward more lenient decisions, irrespective of any major changes in findings that might be recorded in the explanatory variables. The OHSA variable is dichotomous and indicates whether a case was decided in the second or later year after the applicable occupational health and safety act was proclaimed. This time lapse of a year or more was considered appropriate, given the typically lengthy delays between the dates of the refusal and the dates of the decisions and given the time necessary to interpret and develop an articulated approach to the legislation.

Analysis

A variety of statistical techniques were employed in analyzing the data, including logistic regression, ordinary least squares regression, and factor analysis. Ideally, the odds of having a penalty either reduced rather than upheld or overturned rather than upheld would be estimated simultaneously using a multinomial logit, on the premise that boards choose one of these three distinct alternatives in a single decision. However, several of the explanatory variables were associated exclusively with one or two decision outcomes but not a third, and so some variables were available for predicting one set of odds but not the other. Two different variable mixes required two separate binomial logits, the first to predict the odds of having a penalty overturned rather than upheld (PENALTY1) and the second to predict the odds of having a penalty reduced rather than upheld (PENALTY2). As a result, the multinomial logit was only used to predict the three decision outcomes on the basis of the common factors (see below). In all the logits, parameters for each of the independent variables were estimated using the maximum likelihood method, which selects a model that makes the observed data most 'probable'. Both binomial and multinomial logits provided two sets of coefficient estimates, thereby providing an opportunity to assess whether decision-makers emphasized different explanatory factors when reducing penalties than when overturning them.

Ordinary least squares regression was used to analyze the impact of board findings on the choice of appropriate suspension length. A regression model was selected to minimize the sum of squared differences between observed and predicted values of the continuous suspension variable. The coefficients produced by this model helped estimate the linear effect of a one unit change in the explanatory factors on the suspension length chosen by the board, when the effects of all other independent variables are held constant.

A principal components factor analysis was performed on the independent variables. The common factors thereby derived served as explanatory variables in both a multiple regression involving suspension length and a multinomial logit involving the three penalty categories. A principal components analysis produced mutually orthogonal factors which together accounted for all the variation in the independent variables. Common factors associated with the shared variation across the independent variables were identified by examining eigenvalues and scree plots that helped to show which factors had more variation than any of the variables. The factors selected through this process were then rotated using varimax to maximize the loadings of the analyzed variables on the appropriate factors. Each rotated factor was thus designed to 'explain' a mutually exclusive set of independent variables. The resulting set of factors was then employed in both multinomial logit and multiple regression, first to predict the probability of having a penalty either overturned rather upheld or reduced rather than upheld and second to determine the length of a suspension imposed by a board.

Results

Univariate Results

The descriptive statistics and definitions for all the variables in the study are contained in Table 2. Column 1 in this table provides the variable names, first for the response variables and then for the explanatory and control variables. Column 2 repeats the brief definitions listed in Table 1. The third column gives the frequency and percentage of cases where each variable was coded '1', unless otherwise indicated.

1. Decisions of the arbitration and labour relations boards

Table 2 provides summary statistics for three response variables: PENALTY1, PENALTY2, and ARBDAY. Results for PENALTY1 indicate that 82 or 30.1% of the 272 penalties imposed by management were overturned by arbitration and labour relations boards. Results for PENALTY2 indicate that 46 or 16.9% of the 272 penalties imposed by management were reduced to some lesser penalty by boards. The remaining 144 or 52.9% of the 272 penalties were upheld by boards. Summary statistics for the suspension length variable, ARBDAY, show that boards decided on a suspension in 109 or 40.1% of the 272 cases. Most of these suspensions were either one, two, or three days long, but 21 were more than two weeks duration and three were more than a year in length. The average length was 30.5 days, with a standard deviation of 103.9 days.

The data for the response variables indicate that employees who have refused to work for purported safety reasons were treated relatively severely, if not necessarily unjustly, by arbitration and labour relations boards. Moreover, the overall distribution of overturned, reduced, and upheld awards in the sample was similar to, or even more severe than, those distributions in studies of ordinary discipline cases, which by itself suggests a strong discipline orientation in the right to refuse unsafe work cases. For example, the arbitrators from a Newfoundland sample of 350 cases sustained 42% of all disciplinary actions taken against grievors, but no additional information is available on the number of penalties which were either overturned or reduced (Thornicroft 1994). In another study

TABLE 2
DESCRIPTIVE STATISTICS FOR 272 RIGHT TO REFUSE UNSAFE WORK ARBITRATION AND LABOUR RELATIONS BOARD CASES, 1950 TO 1993 (PERCENTAGES IN PARENTHESES)

Variables Frequency 1	Definitions 2	3
Decisions of arbitration and labour relations boards		
PENALTY1	penalty overturned rather than upheld	82.0 (30.1)
PENALTY2	penalty reduced rather than upheld	46.0 (16.9)
ARBDAY	days in suspension awarded by board	30.5* (103.9**)
Insubordination		
T_ORDER	ordered by management to perform task	100.0 (36.8)
F_ORDER	not ordered by management to perform task	17.0 (6.3)
T_CONSEQ	understood consequences of disobedience	12.0 (4.4)
F_CONSEQ	did not understand consequences of disobedience	5.0 (1.8)
T_DISOB	acted disobedient/insubordinate	107.0 (39.3)
F_DISOB	did not act disobedient/insubordinate	13.0 (4.8)
Health and safety as management's prerogative		
T_ABNORM	dangers abnormal for job, occupation, industry	4.0 (1.5)
F_ABNORM	dangers normal for job, occupation, industry	34.0 (12.5)
T_IMMIN	dangers imminent	10.0 (3.7)
F_IMMIN	dangers not imminent	11.0 (4.0)
T_OBJ	objective proof dangers were present	34.0 (12.5)
F_OBJ	no objective proof dangers were present	65.0 (23.9)
T_REAS	reasonable cause to believe danger was present	58.0 (21.3)
F_REAS	no reasonable cause to believe danger was present	69.0 (25.4)
T_SUBJ	genuine concern for health and safety	111.0 (40.8)

TABLE 2 (Cntd.)
DESCRIPTIVE STATISTICS FOR 272 RIGHT TO REFUSE UNSAFE WORK ARBITRATION AND LABOUR RELATIONS BOARD CASES, 1950 TO 1993 (PERCENTAGES IN PARENTHESES)

Variables 1	Definitions 2	Frequency 3
F_SUBJ	no genuine concern for health and safety	87.0 (32.0)
Obedience patterns in workplace relations		
T_GOODREC	good work record with the employer	26.0 (9.6)
F_GOODREC	bad work record with the employer	25.0 (9.2)
T_SERV	long service record with the employer	20.0 (7.4)
F_SERV	short service record with the employer	4.0 (1.5)
T_REPORT	reported health and safety concerns to employer	93.0 (34.2)
F_REPORT	no report of health and safety concerns to employer	86.0 (31.6)
Unprofessional management conduct		
T_CA	employer violated employment contract	12.0 (4.4)
F_CA	employer did not violate employment contract	10.0 (3.7)
T_INCON	employer unfair in administering rules or procedures	16.0 (5.9)
F_INCON	employer fair in administering rules or procedures	15.0 (5.5)
T_FAIL	employer failed to respond to safety concerns	65.0 (23.9)
F_FAIL	employer responded to safety concerns	47.0 (17.3)
Controls		
ARB	arbitration board made decision	167.0 (61.4)
ATTOR_G	employee(s) represented by attorney	124.0 (47.0)
ATTOR_R	employer represented by attorney	196.0 (74.0)
ATT_BOTH	interaction when both parties represented by attorney	104.0 (38.2)
F_GRIEV	employee(s) is female	33.0 (12.1)

TABLE 2 (Cntd.)
DESCRIPTIVE STATISTICS FOR 272 RIGHT TO REFUSE UNSAFE WORK ARBITRATION AND LABOUR RELATIONS BOARD CASES, 1950 TO 1993
(PERCENTAGES IN PARENTHESES)

Variables 1	Definitions 2	Frequency 3
F_DMAKER	board chairperson is female	21.0 (7.7)
D_ATTORN	board chairperson is an attorney	198.0 (72.8)
OHSA	decision in second/later year after OHSA proclaimed	229.0 (84.1)
MGTDAY	days in suspension imposed by employer	3.1* (4.9**)
M_SUSP	employee originally suspended by employer	118.0 (43.3)
DISMISSAL	employee originally dismissed by employer	80.0 (29.4)
DELAY	number of days from refusal to award	313.7* (242.4**)
INTER	interaction of delay and original dismissal	44.6* (136.3**)

* = mean of variable
** = standard deviation of variable

of 633 discipline cases, British Columbian arbitrators upheld 244 or 38.5%, reduced 300 or 45.2%, and completely overturned 90 or 14.2% of management's original penalties (Bemmels 1988b). In studies focusing solely on discharge or suspension arbitrations, management penalties were upheld for between 41.3% (Bemmels 1988a) and 54.4% (Bemmels 1990b; 1991a); reduced for between 18.9% (Bemmels 1990b; 1991a) and 32.7% (Bemmels 1988a); and overturned completely for between 18.3% (Bemmels 1988c) and 36.9% (Bemmels 1990b; 1991a) of all cases.

2. Insubordination

The summary statistics reported in Table 2 show that arbitration and labour relations boards make findings regarding the insubordination aspects of the employee's work refusal, despite the absence of any mention of insubordination in the occupational health and safety legislation across Canada (C.C.H. Canadian Ltd. 1991). The findings for T_ ORDER show that boards established that, in 100 cases, the grievors and complainants had been given an order to work by a management representative. Results for F_ORDER show that, in 17 cases, boards found that the employees had not been ordered to perform their work. No finding was made in 155 of the cases. In contrast to the overall frequency of findings with respect to management orders, few decision-makers commented on whether the employee had understood the likely punitive consequences of not complying with an order. Descriptive statistics for T_CONSEQ show that only twelve boards determined that the employee had comprehended the possible repercussions of disobeying management. Results for F_CONSEQ indicate that only five decision-makers decided that the employee had not understood the negative consequences of flouting management authority. In contrast, disobedience did emerge as an important element in the decisions. Boards decided that the grievor or complainant had disobeyed management (T_ DISOB) in 107 cases, and had not disobeyed management (F_DISOB) in 13 cases. In aggregate, these findings suggest that one or more elements of insubordination were factors in more than 40% of all the decisions in the study.

3. Health and safety as management's prerogative

The descriptive statistics for the health and safety variables in Table 2 show that most boards did not consider whether the dangers in the employee's workplace had been either imminent or abnormal, even though these requirements are cited in both the arbitral jurisprudence (Steel Company of Canada Ltd. 1973, 4 L.A.C. (2d) 315, Johnston) and several of the occupational health and safety laws (C.C.H. Canadian Ltd. 1991). Only four decision-makers determined that the dangers faced had been abnormal for the employee's work (T_ABNORM), but 34 decided that the dangers had been, in fact, normal (F_ABNORM). The imminent nature of the danger was mentioned even less often than abnormality in the cases. Ten decision-makers decided that the perceived danger had been imminent (T_IMMIN), and 11 others decided that it had not been (F_IMMIN). In contrast, the various standards of proof were considered relatively frequently in the decisions, as indicated in Table 2. Some finding regarding objective proof was made in 99 of the cases: 34 boards decided that there was objective evidence (T_OBJ) to support the refusal to work; 65 decided that there was not (F_OBJ). Likewise, the reasonableness of believing that doing the work was hazardous was mentioned in 127 cases. A reasonable belief was noted as present (T_REAS) in 58 decisions and as absent (F_REAS) in 69. A subjective standard of proof was applied in 198 cases. Boards in 111 cases decided that the employee had sincerely believed (T_SUBJ) that doing the work was unsafe, while boards in 87 cases made the opposite finding (F_SUBJ). Overall, these findings indicate the importance boards attach to having the employee prove that continuing to work was dangerous and that refusing to work was therefore necessary. The decision-makers might have alternatively demanded that management prove the work was safe, but this approach was not even broached in any of the awards. The standard of proof imposed on employees was, moreover, an objective one in almost 40% of the cases, even though this standard has not been endorsed in either the arbitral jurisprudence (Steel Company of Canada Ltd. 1973, 4 L.A.C. (2d) 315, Johnston) or the occupational health and safety legislation

(C.C.H. Canadian Ltd. 1991). The reasonable belief standard, by comparison, is either recommended in the arbitral jurisprudence (Steel Company of Canada Ltd. 1973, 4 L.A.C. (2d) 315, Johnston) or required in the statutes (C.C.H. Canadian Ltd. 1991), and yet its application is limited to only half the decisions.

4. Obedience patterns in workplace relations

The summary statistics in Table 2 show that arbitration and labour relations boards were willing to consider the general evidence of the employee's loyalty or obedience to the employer, when making their decisions. Boards examined the employee's work record (T_GOODREC) in 51 cases, and decided that it was good (T_GOODREC) in 26 and bad (F_GOODREC) in 25 cases. Length of service was considered in 24 cases, with decision-makers determining that the employee had long years of service (T_SERV) in 20 cases and short years of service in 4 cases (F_SERV). Decision-makers made a finding on whether the employee had reported his or her safety concerns in 179 cases. In 93 decisions, the report was deemed adequate (T_REPORT) by the board; in 86 cases, it was not (F_REPORT). This widespread consideration of the employee's report is consistent with its prominence in both the arbitral jurisprudence (Steel Company of Canada Ltd. 1973, 4 L.A.C. (2d) 315, Johnston) and occupational health and safety legislation (C.C.H. Canadian Ltd. 1991). Even so, many Boards still made no finding on this issue. The employee's work record and length of service receive even less attention in the cases than does the reporting requirement, but their mention shows that decision-makers were concerned about the degree of harmony in relations between the employee and employer.

5. Unprofessional management conduct

Descriptive statistics for the unprofessional management conduct variables in Table 2 show that decision-makers did assess management's behaviour in responding to the work refusal and frequently did conclude that this behaviour had been inappropriate for the occasion. Boards made some finding in 22 awards on whether management had helped effect the refusal by violating the employee's contract. Twelve of these cases showed that management had been at fault in this regard (T_CA); ten showed that management had not been (F_CA). The inconsistency in management's application of authority was reviewed in 31 cases, and management was found at fault (T_INCON) in 16 of them and not at fault (F_INCON) in 15. Management's failure to respond to the health and safety concerns of the employee was addressed in 112 cases. Neglect of this duty (T_FAIL) was cited in 65 cases, but fulfillment of it (F_FAIL) was noted in 47. Together, these statistics show that many boards were concerned about the arbitrary exercise of management authority. The attention paid to management violations of the employment contract and to the inconsistencies of management behaviour provides strong evidence of this concern, especially when occupational health and safety statutes make no such demands of managers (C.C.H. Canadian Ltd. 1991). Nevertheless, the fact that 160 of the boards failed to assess or discuss whether management had properly investigated the circumstances of the work refusal, as required by law (C.C.H. Canadian Ltd. 1991), suggests that many decision-makers are not concerned about management's actions in these cases.

6. Controls

The descriptive results for the control variables, as outlined in Table 2, indicate that 167 of the decisions were made by arbitration boards (ARB) and 105 by labour relations boards. They also show that attorneys represented 124 of the employees (ATTOR_G) and 196 of the employers (ATTOR_R). Furthermore, lawyers represented both parties (ATT_BOTH) in 104 cases. The average delay from the refusal to the award was 313.7 days, with a standard deviation of 242.4 days. The grievors and complainants were overwhelmingly male; only 33 were female (F_GRIEV). Men also dominated the arbitration and labour relations boards; only 21 board chairpersons were women (F_DMAKER). Lawyers were also heavily represented among the chairpersons of these boards, with 198 of 272 positions (D_ATTORN). The descriptive statistics show that 229 of the 272 decisions occurred in the second or later year after the proclamation of health and safety legislation outlining the right to refuse unsafe work (OHSA). Data for the initial penalties imposed by management indicate that 80 were dismissals (M_DISMIS) and 118 were suspensions (M_SUSP). The suspension penalties varied in length from a fifth of a day to 30 days (MGTDAY), but averaged 3.1 days with a standard deviation of 4.9 days. Most suspensions were relatively short: 30 were one day, 20 were two days, and 24 were three days. The delay for dismissal penalties which were reduced to suspensions averaged 44 days, with a standard deviation of 136 days.

Bivariate Results: Logit Analyses for Each of the Independent Variables

Table 3 shows that a separate logistic regression for each of the explanatory and control variables was used to predict the 'overturned' and 'upheld' response categories of PENALTY1 and 'reduced' and 'upheld' response cateogories of PENALTY2. In many instances, the coefficient estimates for these analyses indicate that the explanatory and control variables have powerful, if sometimes unhypothesized, effects on board decisions to overturn, reduce, or uphold management penalties. However, these results cannot provide a basis for definitively refuting or accepting the hypotheses, without first controlling for the effects of confounding factors which may be the true predictors of the dependent variables. In practical terms, this means that positive associations between the dependent and independent variables, which may be evident from a cursory reading of the awards, could provide misleading ideas about the reasons for board decisions.

1. Insubordination

The logit results for the insubordination variables in columns 1 and 2 of Table 3 provide some support for the first hypothesis, that a board will decide on a harsher (more lenient) penalty when the employee is found 'guilty' ('not guilty') of insubordination. For the PENALTY1 logits in column 1 of Table 3, the T_ORDER, F_ORDER, T_DISOB, and F_DISOB coefficient estimates are all statistically significant and consistent with hypothesis one. The parameter estimates for T_ORDER and T_DISOB are negative, indicating that penalties were less likely to be overturned when boards found that management had given

TABLE 3
BIVARIATE LOGIT AND ORDINARY LEAST SQUARES REGRESSION ANALYSES FOR EACH INDEPENDENT VARIABLE
(T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2	ARBDAY
	Overturned 1	Reduced 2	3
Insubordination			
INTERCEPT	-0.18	-1.42***	53.46***
	(-1.12)	(-5.91)	(3.39)
T_ORDER	-1.36***	0.57*	-34.11*
	(-4.00)	(1.67)	(-1.66)
INTERCEPT	-0.64***	-1.17***	31.08***
	(-4.57)	(-6.88)	(2.99)
F_ORDER	1.23**	0.66	64.16
	(2.15)	(0.88)	(1.18)
INTERCEPT		-1.08***	35.15***
		(-6.35)	(3.31)
T_CONSEQ	# (-)	-1.31	-23.40
		(-1.27)	(-0.59)
INTERCEPT			27.26***
			(2.79)
F_CONSEQ	# (+)	# (+)	224.40***
			(3.82)
INTERCEPT	-0.05	-1.37***	56.20***
	(-0.31)	(-5.48)	(3.32)
T_DISOB	-1.78***	0.43	-35.40*
	(-4.94)	(1.26)	(-1.68)
INTERCEPT	-0.62***	-1.24***	26.67***
	(-4.42)	(-7.29)	(2.70)
F_DISOB	1.72**	2.15**	184.32***
	(2.09)	(2.52)	(3.58)
Health and safety as management's prerogative			
INTERCEPT			
T_ABNORM	# (+)	N/A	N/A

TABLE 3 (Cntd.)
BIVARIATE LOGIT AND ORDINARY LEAST SQUARES REGRESSION ANALYSES
FOR EACH INDEPENDENT VARIABLE
(T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2	ARBDAY
	Overturned 1	Reduced 2	3
INTERCEPT		-1.09***	31.56***
		(-6.05)	(2.80)
F_ABNORM	# (-)	-0.25	10.72
		(-0.54)	(0.39)
INTERCEPT	-0.65***		
	(-4.64)		
T_IMMIN	2.03***	# (-)	N/A
	(2.53)		
INTERCEPT	0.52***	-1.15***	35.58***
	(3.71)	(-6.76)	(3.37)
F_IMMIN	-1.42	0.31	-33.36
	(-1.32)	(0.43)	(-0.80)
INTERCEPT	-0.82***	-1.20***	34.89***
	(-5.46)	(-7.05)	(3.28)
T_OBJ	1.97***	0.86	-19.89
	(4.82)	(1.40)	(-0.50)
INTERCEPT	-0.21	-1.10***	22.90*
	(-1.40)	(-5.50)	(1.88)
F_OBJ	-2.24***	-0.10	34.80
	(-4.14)	(-0.27)	(1.57)
INTERCEPT	-1.44***	-1.22***	27.02***
	(-7.57)	(-7.17)	(2.68)
T_REAS	3.95***	1.45**	139.77***
	(7.18)	(2.10)	(2.97)
INTERCEPT	-0.12	-1.12***	32.67***
	(-0.80)	(-5.33)	(2.62)
F_REAS	-3.82***	-0.05	2.36
	(-3.74)	(-0.14)	(0.10)
INTERCEPT	-1.80***	-1.49***	34.10***
	(-7.50)	(-7.09)	(2.83)
T_SUBJ	2.62***	1.15***	-2.42
	(7.93)	(3.19)	(-0.10)

TABLE 3 (Cntd.)
BIVARIATE LOGIT AND ORDINARY LEAST SQUARES REGRESSION ANALYSES
FOR EACH INDEPENDENT VARIABLE
(T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2	ARBDAY
	Overturned 1	Reduced 2	3
INTERCEPT	0.13	-0.76***	34.36***
	(0.81)	(-3.61)	(2.55)
F_SUBJ	-4.42***	-0.95***	-2.19
	(-4.37)	(-2.63)	(-0.10)
Obedience patterns in workplace relations			
INTERCEPT	-0.60***	-1.50***	32.30***
	(-4.28)	(-7.89)	(2.93)
T_GOODREC	0.78	2.59***	8.26
	(1.25)	(4.70)	(0.27)
INTERCEPT	-0.46***	-1.24***	24.86**
	(-3.28)	(-6.88)	(2.35)
F_GOODREC	-2.24**	0.73	77.88**
	(-2.15)	(1.58)	(2.44)
INTERCEPT	-0.56***	-1.30***	27.42**
	(-4.00)	(-7.22)	(2.59)
T_SERV	0.0003	1.56***	65.57*
	(0.004)	(2.94)	(1.87)
INTERCEPT			
F_SERV	# (-)	# (-)	N/A
INTERCEPT	-1.57***	-1.29***	35.52***
	(-7.47)	(-6.78)	(3.19)
T_REPORT	2.48***	0.72*	-13.37
	(7.51)	(1.84)	(-0.47)
INTERCEPT		-1.20***	35.44**
		(-5.21)	(2.34)
F_REPORT	# (-)	0.13	-3.69
		(0.39)	(-0.18)

TABLE 3 (Cntd.)
BIVARIATE LOGIT AND ORDINARY LEAST SQUARES REGRESSION ANALYSES FOR EACH INDEPENDENT VARIABLE
(T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2	ARBDAY
	Overturned 1	Reduced 2	3
Unprofessional management conduct			
INTERCEPT	-0.68***	-1.15***	
	(-4.85)	(-6.76)	
T_CA	2.98***	1.15	N/A
	(2.83)	(0.80)	
INTERCEPT			34.63***
			(3.32)
F_CA	# (-)	# (-)	-32.63
			(-0.60)
INTERCEPT	-0.61***	-1.28***	27.06***
	(-4.35)	(-7.11)	(2.65)
T_INCON	1.31*	2.13***	115.85***
	(1.82)	(3.00)	(2.66)
INTERCEPT		-1.09***	33.60***
		(-6.41)	(3.20)
F_INCON	# (-)	-0.78	-3.60
		(-1.01)	(-0.07)
INTERCEPT	-1.24***	-1.44***	34.19***
	(-6.88)	(-7.57)	(3.06)
T_FAIL	2.93***	2.00***	-4.87
	(6.97)	(4.16)	(-0.17)
INTERCEPT	-0.36**	-1.03***	28.06**
	(-2.57)	(-5.72)	(2.49)
F_FAIL	-1.36***	-0.54	29.28
	(-2.95)	(-1.20)	(1.11)
Controls			
INTERCEPT	-0.18	-1.89***	30.35
	(-0.90)	(-5.10)	(1.47)
ARB	-0.68**	1.01**	4.10
	(-2.42)	(2.40)	(0.17)

TABLE 3 (Cntd.)
BIVARIATE LOGIT AND ORDINARY LEAST SQUARES REGRESSION ANALYSES FOR EACH INDEPENDENT VARIABLE
(T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2	ARBDAY
	Overturned 1	Reduced 2	3
INTERCEPT	-0.78***	-1.15***	23.02*
	(-3.90)	(-5.22)	(1.74)
ATTOR_G	0.44	-0.08	15.06
	(1.57)	(-0.22)	(0.74)
INTERCEPT	-0.16	-1.16***	47.26**
	(-0.61)	(-3.22)	(2.22)
ATTOR_R	-0.56*	-0.04	-22.76
	(-1.80)	(-0.09)	(-0.94)
INTERCEPT	-0.58***	-1.02***	32.93***
	(-3.86)	(-5.66)	(3.06)
F_GRIEV	0.29	-0.14	5.46
	(0.70)	(-0.25)	(0.15)
INTERCEPT	-0.57***	-1.06***	35.78***
	(-4.07)	(-6.23)	(3.32)
F_DMAKER	0.47	-0.54	-30.88
	(0.97)	(-0.68)	(-0.62)
INTERCEPT	-0.62**	-1.68***	35.25*
	(-2.48)	(-4.42)	(1.71)
D_ATTORN	0.08	0.70	-2.42
	(0.26)	(1.66)	(-0.10)
INTERCEPT	-0.83**	-0.83**	17.23
	(-2.24)	(-2.24)	(0.74)
OHSA	0.31	-0.37	20.06
	(0.77)	(-0.88)	(0.77)
INTERCEPT	N/A	N/A	43.59***
			(3.63)
MGTDAY	N/A	N/A	-3.35
			(-1.58)
INTERCEPT	-0.23	-1.05***	N/A
	(-1.35)	(-4.56)	
M_SUSP	-0.82***	-0.17	N/A
	(-2.82)	(-0.51)	

TABLE 3 (Cntd.)
BIVARIATE LOGIT AND ORDINARY LEAST SQUARES REGRESSION ANALYSES FOR EACH INDEPENDENT VARIABLE
(T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2	ARBDAY
	Overturned 1	Reduced 2	3
INTERCEPT	-0.79***	-1.67***	3.19
	(-4.93)	(-7.26)	(0.33)
M_DISMIS	0.86***	1.55***	143.32***
	(2.77)	(4.30)	(6.84)
INTERCEPT	-0.54**	1.00***	10.03
	(-2.34)	(-3.59)	(0.63)
DELAY	5.31E-6	-0.0004	0.06
	(0.01)	(-0.57)	(1.65)

* = statistically significant at the .10 level (2-tailed test)
** = statistically significant at the .05 level (2-tailed test)
*** = statistically significant at the .01 level (2-tailed test)
# (-) = negative infinite coefficient
# (+) = positive infinite coefficient
N/A = not applicable

an order or that the employee had acted disobedient. The parameter estimates for F_ORDER and F_DISOB are positive, indicating that penalties were more likely to be overturned when boards found that management had not given an order or that the employee had acted obedient. For the PENALTY2 logits in column 2 of Table 3, the F_DISOB coefficient estimate is also statistically significant and consistent with hypothesis one, but the T_ORDER, F_ORDER, and T_DISOB coefficient estimates are not. The F_DISOB coefficient estimate is positive, as before, indicating that reduced penalties were more likely when boards found that the employee had been obedient. However, the F_ORDER and T_DISOB parameter estimates in column 2 of Table 3 are both statistically insignificant, indicating no effect of these findings on the possibilities of having a penalty reduced. In addition, the T_ORDER parameter estimate in column 2 of Table 3 is positive, implying that penalties were more likely to be reduced once boards found that management had ordered the employee. In aggregate, these findings suggest that insubordination (subordination) findings decrease (increase) the likelihood of having a penalty overturned, in accordance with hypothesis one, but have no effect on the likelihood of having a penalty reduced, except when the employee is found to have been obedient.

Results for T_CONSEQ and F_CONSEQ in Table 3 provide additional support for the first hypothesis. The infinite positive parameter estimates for F_CONSEQ in both columns 1 and 2 indicate that, when the employee failed to understand the probable consequences of his or her disobedience, none of the penalties was upheld. The infinite negative parameter estimate for T_CONSEQ in column 1 indicates that, when the employee did understand the likely consequences of his or her disobedience, none of the penalties was overturned. The T_CONSEQ parameter estimate in column 2 was, however, statistically insignficant, implying no effect of this finding on the likelihood of getting a penalty reduced.

2. Health and safety as management's prerogative

The health and safety results for the PENALTY1 logits in column 1 of Table 3 provide strong support for the second hypothesis, that a board will decide on a harsher (more lenient) penalty when it finds obvious indications that management has (has not) abused its customary jurisdiction over health and safety. The results for the PENALTY2 logits in column 2 of the same table also provide support for the second hypothesis, but to a lesser degree. The coefficient estimates for F_ABNORM, F_IMMIN, T_OBJ, F_OBJ, and F_REAS in column 2 are all statistically insignificant, suggesting that these findings play no role in board decisions to reduce penalties. However, the T_REAS and F_SUBJ coefficients in column 2 are statistically significant and consistent with the second hypothesis. T_REAS has a positive parameter estimate, indicating that penalties were more likely to be reduced when boards found that there had been reasonable cause to fear danger. F_SUBJ has a negative parameter estimate, indicating that penalties were less likely to be reduced when boards found that the employee had refused to work for some reason other than a genuine fear of danger.

The results for the PENALTY1 logits in column 1 of Table 3 are generally consistent with the second hypothesis. An exception is the F_IMMIN variable, which has a statistically insignificant coefficient estimate. It shows that the prospects of having a penalty overturned were not affected by board determinations that the work was not imminently dangerous. In contrast, the coefficient estimates for the T_IMMIN, T_OBJ, F_OBJ, T_REAS, F_REAS, and F_SUBJ variables are all statistically signficant. The positive parameter estimates for T_IMMIN, T_OBJ, and T_REAS show that penalties were more likely to be overturned when boards decided that there was imminent danger, objective proof of danger, or reasonable cause to fear danger at the time of the refusal to work. The negative parameter estimates for F_OBJ, F_REAS, and F_SUBJ show that penalties were more likely to be overturned when boards decided that there was no objective proof of danger, no reasonable cause to fear danger, or no genuine fear of danger at the time of the refusal.

Further support for hypothesis two is provided by the results for T_ABNORM and F_ABNORM listed in Table 3. The T_ABNORM variable has an infinite positive parameter estimate in column 1, which indicates that the penalties were all overturned in cases where the boards considered the danger abnormal for the work. The F_ABNORM variable has an infinite negative parameter estimate in column 1, which indicates that no penalties were overturned in cases where the boards considered the danger normal for the work.

In column 2 of Table 3, the T_IMMIN results do not support the second hypothesis. An infinite negative parameter estimate indicates that none of the penalties was reduced in cases where the board felt that there had been imminent danger. However, this result probably reflects the relatively small number of cases involving T_IMMIN findings and the overall board preference for overturning rather than reducing penalties, as reported in Table 1.

In columns 1 and 2 of Table 3, the T_SUBJ results also do not support the second hypothesis. The positive and statistically significant parameter estimates for T_ SUBJ show that penalties were more likely to be overturned or reduced when boards felt that the employee had a genuine fear of danger at the time of the refusal. However, hypothesis two states that boards will not normally override management's disciplinary penalties, unless there are strong indications that management has neglected its jurisdiction over health and safety. One employee's fears of danger should not therefore prove sufficient to obtain more lenient treatment from a board. The effects of T_SUBJ might be explained by the confounding effects of T_REAS. Specifically, the genuine fear of danger findings may be positively associated with decisions to overturn or reduce penalties, but only because of their positive association with a true causal factor such as reasonable belief.

3. Obedience patterns in workplace relations

The logit results for the general obedience models in columns 1 and 2 of Table 3 partially support the third hypothesis, that a board will decide on a more lenient (harsher) penalty when it finds that the employee has (has not) demonstrated loyalty or obedience to management. Most coefficient estimates are statistically significant and consistent with the third hypothesis in only one of the two sets of logits. For instance, the coefficient estimates for T_GOODREC and T_SERV are both positive and statistically significant for the PENALTY2 logits in column 2 of Table 3, but not for the PENALTY1 logits in column 1 of Table 3. A finding that the employee had a good record or long years of service thus improves the employee's chances of getting a penalty reduced, but has no effect on the likelihood of having it overturned. Conversely, the coefficient estimate for F_GOODREC is both negative and statistically significant in column 1 of Table 3, but not in column 2 of Table 3. As a result, a finding that the employee had a bad record decreases the likelihood of having a penalty overturned, but has no effect on the likelihood of having it reduced. Only the coefficient estimates for the T_REPORT variable are statistically significant and positive in both columns 1 and 2. A finding that the employee reported his or her safety concerns to management thus raises the prospects of having a penalty either overturned or reduced.

Further support for the third hypothesis is provided by the results for F_REPORT and F_SERV. In Table 3, the infinite parameter estimates, by definition, show that there are no cases for F_REPORT where the penalty was overturned and no cases for F_SERV where the penalty was either reduced or overturned. Hence, a finding that the employee had not reported his or her safety concerns foreclosed any possibility of having a penalty overturned, while a finding that the employee had short years of service foreclosed any possibility of having a penalty either overturned or reduced. However, the F_REPORT variable in column 2 is not statistically significant, suggesting that a failure to report one's safety concerns has no bearing on the likelihood of getting a reduced penalty.

4. Unprofessional management conduct

The logit results in columns 1 and 2 of Table 3 partially support the fourth hypothesis, that a board will decide on a more lenient (harsher) penalty when it finds that management's conduct was unprofessional (professional). The positive coefficient estimates for T_FAIL and T_INCON are statistically significant and consistent with hypothesis four in both columns 1 and 2. Penalties were therefore more likely to be either overturned or reduced whenever boards felt that management had failed to respond to the employee's safety concerns or had acted inconsistently. The coefficient estimates for the remaining variables were consistent with hypothesis four and statistically significant in either column 1 or column 2, but not in both. For instance, T_CA was positively and significantly related to PENALTY1, but not to PENALTY2. A determination that management had violated the employment contract thus improved the chances of an overturned, but not a reduced, penalty. The F_FAIL variable was negatively and significantly related to PENALTY1, but not to PENALTY2. A finding that management had responded to the employee's safety concerns thus lowered the likelihood of getting a penalty overturned, but had no effect on the chances of getting a penalty reduced.

Additional support for hypothesis four is evident in the infinite parameter estimates for F_CA and F_INCON listed in Table 3. Infinite negative parameter estimates for F_CA in columns 1 and 2 indicate that penalties involving this finding were neither overturned nor reduced. Hence, a finding that management had complied with the employment contract foreclosed any possibility of having a penalty either overturned or reduced. An infinite negative parameter estimate for F_INCON in column 1 indicates that penalties involving this finding were not overturned. A finding that management had behaved consistently thus foreclosed any prospect of getting a penalty overturned. The F_INCON parameter estimate in column 2 was, however, statistically insignificant, indicating the absence of any relationship between this finding and the chances of having a penalty reduced.

5. Controls

The bivariate logistic regressions provided in columns 1 and 2 of Table 3 indicate that the effects of the control variables are generally statistically insignificant. Employees represented by lawyers (ATTOR_G) were not more or less likely than employees not represented by lawyers to have their penalties overturned, reduced, or upheld. Similarly, female employees (F_GRIEV) were not more or less likely than male employees to have their penalties overturned, reduced, or upheld. Boards headed by women (F_DMAKER) were not more or less likely than other boards to either uphold, reduce, or overturn penalties. Boards chaired by lawyers (D_ATTORN) were also not more or less likely than other boards to choose one penalty over another. Board decisions to overturn or reduce management penalties were also unaffected by the delay (DELAY) from the refusal to the decision. They were also unaffected by the enactments of the statutory right to refuse unsafe work (OHSA). On the other hand, dismissals (M_DISMIS), when compared to other management penalties, were 137% more likely to be overturned, and 372% more likely to be modified, than upheld. In contrast, suspensions (M_SUSP) were 57% less likely than other management penalties to be overturned rather than upheld, but suspensions were not more likely to be reduced than other penalties. Furthermore, employers represented by an attorney (ATTOR_R) were 43% less likely to have their penalties overturned, but were not more or less likely to have their penalties reduced, than employers not so represented. Arbitration boards (ARB) were half as likely as labour relations boards to override management disciplinary actions, but 176% more likely to modify them.

Bivariate Results: Ordinary Least Squares (OLS) Regressions

Column 3 of Table 3 provides the coefficient estimates and t-values for the OLS regressions of the boards' suspension length choices (ARBDAY) on each of the control and explanatory variables. As before, some of the results are strongly associated with the dependent variable, but again no firm conclusions can be made on the basis of these findings, without first controlling for the impacts of other variables.

1. Insubordination

The regression results for the insubordination variables in column 3 of Table 3 do not support the first hypothesis, that a board will decide on a harsher (more lenient) penalty when the employee is found 'guilty' ('not guilty') of insubordination. The coefficients for the F_ORDER and T_CONSEQ variables are both statistically insignificant, indicating no association between these measures of insubordination and board choices of suspension length (ARBDAY). The coefficient estimates for the T_ORDER, F_CONSEQ, T_DISOB, and F_DISOB variables are all statistically significant, but their signs suggest relationships with the dependent variable which are contrary to those suggested in the first hypothesis. Findings of insubordination should have precipitated harsher treatment, but had the opposite effect. For example, the negative coefficients for T_ORDER and T_DISOB suggest that suspensions were, respectively, 34 and 35 days shorter when management had given the employee an order or when the employee had been disobedient, as compared to cases where neither of these findings was made. Full exoneration of insubordination charges should have precipitated more lenient treatment, but had the opposite effect. For instance, the positive coefficients for F_CONSEQ and F_DISOB indicate that suspensions were, respectively, 224 and 184 days longer when the employee did not understand the likely punitive consequences of disobedience or did not actually disobey.

The anomalous nature of the OLS regression results may reflect the influence of confounding variables. For instance, insubordination findings may be relatively uncommon in dismissal (M_DISMIS) cases, and yet reductions of these penalties to suspensions may account for most of the longer suspension durations. If this confounding effect were occurring, insubordination factors would be negatively related to suspension length as is actually observed in the model results of column 3 in Table 3.

2. Health and safety as management's prerogative

None of the bivariate regressions for the health and safety variables provides support for the second hypothesis, that a board will decide on a harsher (more lenient) penalty when it finds obvious indications that management has (has not) abused its customary jurisdiction over health and safety. The coefficients for the F_ABNORM, F_IMMIN, T_OBJ, F_OBJ, F_REAS, T_SUBJ, and F_SUBJ variables are all statistically insignificant and the variation in each accounts for less than one percent of the variation in the dependent variable. In addition, no findings of abnormal danger (T_ABNORM=0 where ARBDAY>0) or imminent danger (T_IMMIN=0 where ARBDAY>0) were made for any of the cases where boards awarded suspensions. T_REAS is the only health and safety variable which has a statistically significant association with ARBDAY. Its coefficient is positive and shows that board suspension choices are 139 days longer when the employee is deemed to have reasonably believed that his or her work was hazardous. This finding is, however, inconsistent with the second hypothesis that more lenient treatment would follow once the workplace was proven to be dangerous.

3. Obedience patterns in workplace relations

The OLS bivariate regression models in column 3 of Table 3 do not, for the most part, support the third hypothesis, that a board will decide on a more lenient (harsher) penalty when it finds that the employee has (has not) demonstrated loyalty and obedience to management. The estimated coefficients for T_GOODREC, T_REPORT, and F_REPORT are all statistically insignificant and the variability in each accounts for less than one percent of the variation in the dependent variable. Furthermore, none of the board suspension cases involves a single situation where the employee was deemed to have had a short service record with the employer (F_SERV=0 where ARBDAY>0). On the other hand, the F_GOODREC and T_SERV variables are both statistically significant and account for five and three percent of the variation in ARBDAY, respectively. The positive coefficient for F_GOODREC shows that a bad work record, as judged by a board, is associated with a 77 day increase in suspension length. This finding is consistent with the third hypothesis, that indications of disobedience and disloyalty in the past or present would lead to more severe punishments than in cases where there were no such indications.

The positive coefficient for T_SERV shows that long service with the employer, as judged by a board, is associated with a 65 day increase in suspension length. This finding contravenes the third hypothesis, that indications of obedience or loyalty in the past or present would lead to more lenient penalties than in cases where there were no such indications. It also contradicts the results of the bivariate logistic regression analyses which show that a finding of long tenure raises the chances of a reduced rather than an upheld penalty. This apparent incongruity may reflect the confounding influence of severity in management's initial penalty. For instance, findings of long tenure (T_SERV) may have their primary impact on the chances of a lengthy suspension being substituted for a dismissal. This scenario would ensure that long tenure was positively related to both suspension length and the probability of a reduced penalty, thereby resolving the ostensible contradiction.

4. Unprofessional management conduct

The OLS bivariate regression results listed in column 3 of Table 3 do not support the fourth hypothesis, that a board will decide on a more lenient (harsher) penalty when it finds that management's conduct has been unprofessional (professional). Parameter estimates for F_CA, F_INCON, T_FAIL, and F_FAIL are all statistically insignificant and the variation in each accounts for less than one percent of the variation in ARBDAY. There are also no board suspension cases where management was found to have violated the collective agreement (T_CA=0 where ARBDAY>0). The sole significant result concerns findings of inconsistent or discriminatory treatment of the employee by management (T_INCON). When boards make these findings, the suspensions are typically 115 days longer than they would have been had this finding not been made. This result contradicts the fourth hypothesis that a finding of management misconduct should lead to less harsh penalties. It also contradicts the bivariate logit results for T_INCON, which show that management inconsistency raises the chances of having a penalty either overturned or reduced. It seems likely, therefore, that the severity of the intial penalty may be once more confounding the results to the extent that management inconsistency (T_INCON) may have led to the substitution of dismissals with lengthy suspensions, leaving the inconsistency variable positively related to suspension duration.

5. Controls

In column 3 of Table 3, the results for the OLS bivariate regressions provide little evidence that the control variables are, for the most part, significantly related to arbitration and labour relations board decisions regarding suspension length (ARBDAY). Only an initial decision by management to dismiss an employee (M_DISMIS) has a statistically significant impact on the dependent variable. The positive parameter estimate for M_ DISMIS indicates that suspensions decided by boards were 143 days longer for cases where management had previously dismissed rather than otherwise penalized (i.e., suspended) the employee. Furthermore, the variation in management's decision to dismiss or not dismiss the employee accounted for 30% of the variation in the suspensions determined by boards. These results suggest that boards to some extent follow managers in deciding on the appropriate level of severity for a penalty.

Multivariate Results: Logit Analysis of Overturned vs. Upheld Penalties

Column 1 of Table 4 presents the results of a logit that was used to compare the chances of receiving an overturned (CATEGORY 1) versus a sustained (CATEGORY 0) penalty from an arbitration or labour relations board. Forty six cases where the board modified management's disciplinary actions were excluded from this particular analysis, as were 18 additional cases with missing observations. As a result, there were 208 out of 272 total cases available for statistical comparisons of overturned and upheld penalties.

The reduction in the data set left several additional independent variables exclusively associated with penalties that were either all upheld or all overturned. For example, there were eleven cases where a board found that the employee understood the consequences of disobeying management (T_CONSEQ) and the penalty was sustained, and none where the employee was thought to be similarly well-informed but the penalty was overturned.

Likewise, there were 23 cases where the employee's work was judged normally dangerous (F_ABNORM) by the board and the penalty was upheld, and none where the board made the same judgment yet the penalty was overturned. The variables F_ CONSEQ, T_ABNORM, F_REAS, F_SERV, F_REPORT, F_CA, and F_INCON were also all related to one or the other of the two penalty categories. A logistic regression would have generated infinite parameter estimates for these variables, because a finding ('1' value) on any one of them makes it certain that the penalty would be either upheld or overturned. These variables were therefore removed from the analysis, with the expectation that doing so would not affect parameter estimates for the remaining variables (Jobson 1992: 290).

Two additional variables, T_SERV and T_INCON, were excluded from the analysis, because they were perfectly correlated with other variables. Specifically, the values of T_SERV matched those of T_GOODREC on every observation, implying that long service and good record findings always occurred together. The values of T_INCON matched those of F_SUBJ, indicating that, wherever management was judged to have acted inconsistently, the employee was deemed not to have been motivated by health and safety in refusing to work. Removal of the T_SERV and T_INCON variables prevented convergence problems in the iterative process of coefficient estimation, thereby ensuring that these estimates were not erroneously large.

The model estimated with the remaining variables provides a close fit for the data, as indicated by several measures. The log likelihood statistic (217.922 with 28 degrees of freedom) for the independent variables is statistically significant at the one percent level (p=.0001), implying a rejection of the null hypothesis that all the coefficient estimates for these variables are zero. The Score statistic (151.062 with 28 degrees of freedom) also shows that the parameter estimates of the independent variables are, as a group, statistically discernible from zero at the one percent level (p=.0001), and are therefore highly unlikely to all be zero. A pseudo R-square statistic (1-(-28.123/-137.084)=.7948) indicates that 79% of the uncertainty in the data can be explained by the independent variables. Various ordinal measures of association, including Somer's d (.975), Gamma (.975), Tau-a (.457), and Tau-c (.987), indicate that the predicted probabilities and observed responses for the dependent variable are virtually all concordant (98.7%), again suggesting a high degree of fit between the data and the model. As a result, the predicted probability of a penalty being overturned is almost always higher in cases where the penalty actually was overturned than in cases where the penalty was sustained. A classification table shows that the model correctly predicts the actual value of the dependent variable in 85.5% of the cases, using the convention that predicted penalties with a greater than fifty percent chance of being overturned were, in fact, overturned. Sixteen of the 77 overturned penalties are misclassified as upheld (false negatives=16/133=12%); fourteen of the 131 upheld penalties are misclassified as overturned (false positives=14/75=18.7%). These rates of misclassification are not very sensitive to changes in the predicted probability required to classify a penalty as overturned. For example, the false positive rate is still only 21.3% when penalties are classified as overturned for predicted probabilities as low as .10. Moreover, the false negative rate is only 18.5% when penalties are classified as overturned for predicted probabilities at least as high as .90. These results imply that the predicted probabilities of a penalty being overturned are usually very high for cases where penalties were overturned and very low where penalties were upheld, again indicating an excellent fit between the model and data.

The influence measures for each of the observations confirm that the model fits the data well. Most observations exert little influence on the overall measures of fit, and so their deletion from the analysis would have little effect on the deviance statistic (DIFDEV). However, the deviance would rise from 56.24 to 97.38, an increase of 41.14 (9.58+10.65+9.50+11.41=41.14), if observations 3, 30, 63, and 152 were omitted. Even with these changes the deviance statistic would nevertheless remain statistically insignificant, leading to the acceptance of the null hypothesis that the model fits the data perfectly.

The coefficient estimates and the t-values for the variables are provided in column 1 of Table 4 and are used to determine whether the multivariate logit results support the hypothesized effects for comparisons of overturned and upheld penalties. A positive and statistically significant coefficient for any variable indicates that that particular control situation or finding raises the odds of having a penalty overturned rather than upheld. A negative and statistically significant coefficient for any variable indicates that that particular control situation or finding lowers the odds of having a penalty overturned rather than upheld. Moreover, the effects of the findings are all in relation to a hypothetical base case (the '0' category) in which no findings, favourable or unfavourable to the employee, were made (i.e., no issues were mentioned).

The set of coefficient results for the insubordination variables in column 1 of Table 4 provides support for the first hypothesis. Hence, insubordination findings that are favourable to the employee (F_ORDER; F_CONSEQ; F_DISOB) generally improve his or her chances of full exoneration. When, for example, a board decides that management neglected to order the employee back to work (F_ORDER), the odds of having the penalty overturned are 84 times more likely than they would have been had the board not mentioned this issue. Correspondingly, a finding that the employee did not disobey management (F_DISOB) is 90 times more likely to result in full exculpation than if disobedience had not been addressed at all. Insubordination findings that are unfavourable to the employee have the reverse effect. Specifically, the odds of full exoneration are 98% lower when a board declares that the employee was ordered to continue working (T_ORDER) than when a board makes no finding on this issue. However, a determination that the employee acted disobedient (T_DISOB) has no significant influence on board decisions to overturn or sustain a penalty.

Evidence for the health and safety variables in column 1 of Table 4 provides only partial support for the second hypothesis that management's jurisdiction over health and safety is unquestioned by boards unless there are strong indications that the work is

TABLE 4
MULTIVARIATE BINOMIAL LOGIT ANALYSES FOR PENALTY1 AND PENALTY2
(T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2
	Overturned 1	Reduced 2
INTERCEPT	-4.79* (-1.68)	-14.57*** (-3.53)
Insubordination		
T_ORDER	-4.00** (-2.02)	1.27 (0.59)
F_ORDER	4.43** (2.15)	-0.04 (-0.01)
T_CONSEQ	#	-5.29** (-1.96)
F_CONSEQ	#	#
T_DISOB	2.61 (1.25)	1.31 (0.59)
F_DISOB	4.51** (2.13)	10.12*** (2.65)
Health and safety as management's prerogative		
T_ABNORM	#	#
F_ABNORM	#	-2.32* (-1.72)
T_IMMIN	-1.53 (-0.80)	#
F_IMMIN	-3.16 (-0.10)	0.45 (0.18)
T_OBJ	1.03 (.79)	0.65 (0.38)
F_OBJ	-1.87 (-0.91)	-0.90 (-0.77)

TABLE 4 (Cntd.)
MULTIVARIATE BINOMIAL LOGIT ANALYSES
FOR PENALTY1 AND PENALTY2
(T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2
	Overturned 1	Reduced 2
T_REAS	6.17*** (3.64)	5.86** (2.32)
F_REAS	#	1.36 (1.25)
T_SUBJ	-0.07 (-0.07)	2.56* (1.85)
F_SUBJ	-3.79** (-2.01)	1.02 (0.85)
Obedience patterns in workplace relations		
T_GOODREC	6.05** (2.18)	6.78*** (3.62)
F_GOODREC	-6.56 (-0.14)	-3.09* (-1.74)
T_SERV	#	-2.82* (-1.79)
F_SERV	#	#
T_REPORT	3.02*** (2.58)	0.14 (0.10)
F_REPORT	#	-0.73 (-0.57)
Unprofessional management conduct		
T_CA	3.71 (1.45)	#
F_CA	#	#
T_INCON	#	2.77 (1.53)

TABLE 4 (Cntd.)
MULTIVARIATE BINOMIAL LOGIT ANALYSES
FOR PENALTY1 AND PENALTY2
(T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2
	Overturned 1	Reduced 2
F_INCON	#	1.45 (0.75)
T_FAIL	2.68* (1.90)	5.06*** (3.36)
F_FAIL	-1.71 (-1.08)	-2.04 (-1.26)
Controls		
ARB	-2.01* (-1.69)	2.74** (2.22)
ATTOR_G	0.32 (0.23)	-4.81* (-1.68)
ATTOR_R	-0.51 (-0.38)	-0.66 (-0.55)
ATT_BOTH	0.67 (0.38)	2.80 (0.94)
F_GRIEV	2.59 (1.37)	1.02 (0.78)
F_DMAKER	-0.37 (-0.18)	0.41 (0.17)
D_ATTORN	1.51 (1.19)	-0.90 (-0.97)
OHSA	-0.90 (-0.59)	2.59 (1.39)
M_SUSP	0.14 (0.14)	5.06*** (2.75)
M_DISMIS	2.72** (2.01)	11.34*** (3.56)

TABLE 4 (Cntd.)
MULTIVARIATE BINOMIAL LOGIT ANALYSES FOR PENALTY1 AND PENALTY2 (T-VALUES IN PARENTHESES)

	PENALTY1	PENALTY2
	Overturned 1	Reduced 2
DELAY	0.001 (0.81)	0.001 (1.03)
Log likelihood(covariates)	217.92***	130.20***
Score Statistic	151.06***	98.91***
Deviance statistic	56.24	61.56

* = statistically significant at the .10 level (2-tailed test)
** = statistically significant at the .05 level (2-tailed test)
*** = statistically significant at the .01 level (2-tailed test)
# = excluded from the analysis

dangerous. The parameter estimates are, with two exceptions, statistically insignificant, once the effects of other variables are held constant. Findings regarding the imminence of the danger (T_IMMIN or F_IMMIN) have no bearing on decisions to rescind the employee's punishment. A board assessment of the objective evidence (T_OBJ or F_OBJ) also has no significant effects on decisions to overturn the original discipline, once other variables Furthermore, board recognition that the employee honestly believed that his or her work was dangerous (T_SUBJ) has no significant impact on this decision. If, however, a board feels that the employee reasonably believed his or her work was unsafe (T_REAS), then the chances of full exculpation are 478 times greater than they would have been had the reasonable belief issue not been mentioned. Conversely, the employee is 98% less likely to escape punishment, if a board determines that the refusal was not primarily motivated by strictly health and safety concerns (F_SUBJ).

The coefficient statistics in column 1 of Table 4 show that, as predicted by the third hypothesis, boards generally account for evidence of past and present obedience in the employee's behaviour when they make decisions to sustain or overturn management's disciplinary actions. An acknowledgement of a good work record (T_GOODREC) renders the likelihood of a full exculpation 424 times greater than in those situations where work record was not examined. Recognition that the employee adequately reported his or her safety concerns (T_REPORT) increases the chances of complete exoneration 20 times. However, a finding that the employee had a poor work record (F_GOODREC) has no bearing on the likelihood of having a penalty overturned.

The coefficient estimates for the management misconduct variables in column 1 of Table 4 are generally statistically insignificant. Only the statistically significant coefficient for T_FAIL provides support for the fourth hypothesis, that boards impose more lenient penalties when they find that management has acted unprofessionally in a work refusal situation. It shows that a penalty is 14 times more likely to be overturned in cases where a board finds that management did not adequately respond to the employee's health and safety complaints (T_FAIL) than in cases where this matter is not assessed. The remaining results indicate that decisions to rescind management's disciplinary actions are not influenced by board findings that management violated the contract (T_CA). They also indicate that these decisions are not affected by findings that management did respond to the employee's health and safety concerns (F_FAIL). Together, these outcomes suggest that the inappropriateness of management's behaviour, at least in terms of its statutory obligations to investigate, leads to more lenient treatment for the employee.

Few of the coefficient estimates for the control variables in column 1 of Table 4 are statistically significant. One can thus conclude that retention of legal counsel by either party (ATTOR_G or ATTOR_R) makes no difference for decisions to overturn a penalty, regardless of whether or not the other party has a lawyer (ATT_BOTH). The delay from the refusal to the decision (DELAY) is also unimportant as a deciding factor. In addition, the gender of the employee (F_GRIEV) and the chief decision-maker (F_DMAKER) have no bearing on these decisions. Attorney chief decision-makers (D_ATTORN) are also not more or less likely than non-attorney chief decision-makers to rescind management's disciplinary actions. These decisions are, furthermore, unaffected by whether or not the employee was initially suspended by management (M_SUSP) or by whether or not the case was decided before or after the proclamation of the relevant occupational health and safety legislation (OHSA). However, the results do indicate that arbitrators (ARB) are 86% less likely than labour relations boards to award a full exoneration. They also show that employees who have been dismissed (M_DISMIS) are 15 times more likely to have these penalties overturned than employees who have been neither dismissed nor suspended.

The intercept term has a negative parameter estimate that is statistically significant. It indicates that, when the indepenent variables are equal to zero, the chances of having a penalty overturned are substantially less than 100:1 against. A favourable finding cannot therefore ordinarily turn the odds in the employee's favour, except when in combination with other positive findings and control situations. To illustrate, a male employee's chances of winning a full exoneration are still 100:17 against, when a labour relations board only acknowledges that a report of safety concerns was made to management (T_REPORT). However, if the same board determines that there was both reasonable cause (T_REAS) and an adequate report (T_REPORT), the odds of receiving a full exoneration jump to 81:1 in favour.

A comparison of the multivariate results in column 1 of Table 4 with the bivariate results in column 1 of Table 3 provides evidence of both suppressor and confounding effects. A suppressor effect on the dependent variable is obscured in bivariate analysis by the positive association between a suppressed variable and another independent variable that has a contrary effect. As a result, the coefficients of suppressed variables are statistically significant in multivariate analysis, with other variables controlled, but are not in bivariate analysis. For instance, the coefficient estimate for T_GOODREC is statistically significant in the multivariate logit in column 1 of Table 4, but is not in the bivariate logit of column 1 in Table 3. This result indicates that a good work record improves the odds of a full exoneration, even though this finding is positively associated with one or more factors that decrease these odds.

A confounding effect on the dependent variable is actually spurious, but appears real in bivariate analysis, because the confounded variable is associated with another independent variable that has a real effect. As a result, the coefficients of confounded variables are statistically insignificant in multivariate analysis, with other variables controlled, but are statistically significant in bivariate analysis. For example, the coefficient estimates for T_DISOB, T_IMMIN, F_IMMIN, T_OBJ, F_OBJ, T_SUBJ, F_GOODREC, T_CA, F_FAIL, ATTOR_R, and M_SUSP are statistically insignificant in the multivariate logit in column 1 of Table 4, but are statistically significant in the bivariate logits in column 1 of Table 3. These results imply that findings indicating disobedience, imminent danger, (no) objective proof of danger, genuine safety concerns, a bad work record, a violation of the employment contract, or an investigation of employee safety concerns have no significant impact on the odds of getting a penalty overturned, even though they are associated with findings and control conditions which do affect these odds. Likewise, retention of an attorney by an employer and a suspension penalty imposed by management have no significant effect on the odds of having a penalty overturned, even though these factors are associated with findings and control conditions which do affect these odds.

The other independent and control variables are either statistically significant or insignificant in both the bivariate and multivariate logits. For example, the coefficients for F_IMMIN, ATTOR_G, F_GRIEV, F_DMAKER, D_ATTORN, OHSA, and DELAY are not statistically significant in either type of logit. In contrast, the coefficients for T_ ORDER, F_ORDER, F_DISOB, T_REAS, F_SUBJ, T_REPORT, T_FAIL, ARB, and M_ DISMIS are statistically significant in both types of logits. As a result, no suppressor or confounding effects were evident for these variables.

Multivariate Results: Logit Analysis of Reduced vs. Upheld penalties

Column 2 of Table 4 presents the results of a logit that was used to compare the employee's chances of obtaining a modified (CATEGORY 1) rather than an unmodified (CATGEORY 0) penalty from an arbitration or labour relations board. Eighty two cases where the board overturned management's disciplinary actions were deleted from this particular analysis, as were 17 more cases with missing observations. There were accordingly 173 out of 272 total cases available for statistical comparisons of modified and unmodified penalties.

The decrease in the number of observations meant that some variables were solely associated with one or the other of the two penalty categories. The penalty was, for example, upheld in the two cases where the board declared that the employee was in imminent danger (T_IMMIN). It was also upheld in the one case where the board determined that the employer violated the terms of the contract (T_CA). Findings for the variables F_CONSEQ, T_ABNORM, F_SERV, and F_CA also resulted exclusively in reduced or upheld penalties. If these variables had been included in the logit analysis, their parameter estimates would have been infinite in accordance with the expectation that a finding on any one of them would have guaranteed one or the other of the two penalty outcomes. They were, however, removed in the knowledge that the parameter estimates for the other variables would not be affected (Jobson 1992: 290).

A logit analysis was conducted without the problem variables identified above. The resulting model provides an excellent fit of the data: predicted and observed values are very similar. The log likelihood statistic (130.208 with 33 degrees of freedom) for the independent variables is statistically significant at the one percent level (p=.0001). The null hypothesis that all the parameter estimates for the independent variables are zero is therefore rejected. The Score statistic (98.918 with 33 degrees of freedom) also shows that at least one of the parameter estimates of the independent variables is statistically significant at the .01 level. The pseudo R-square statistic (1-(-30.7825/-95.8865)=.6789) indicates that 68% of the uncertainty in the data can be accounted for by the model. The Somer's d (.947), Gamma (.947), Tau-a (.35), and Tau-c (.973) statistics provide clear evidence of a strong positive association between the predicted and observed values of the dependent variable. A classification table shows that the model correctly classifies 81.5% of the observed cases, when penalties are categorized as reduced because their predicted probabilities are greater than 50%. At this cut-off, 14 of the upheld penalties are incorrectly classifed as reduced, for a false positive rate of 36.8% (14/38). Eighteen of the reduced penalties are also incorrectly classified as upheld, for a false negative rate of 13.3% (18/135). These results show that, despite the generally good fit between the observed and predicted values of the dependent variable, the model is a much better predictor of upheld than of reduced penalties. This dichotomy is most apparent when the predicted probability required to classify the penalty as reduced is either increased to .90 or decreased to .10. An increase to .90 renders it harder to classify a penalty as reduced and thus increases the possibility of making a mistake in misclassifying a reduced as an upheld penalty, but, in this instance, the false negative rate is still a relatively low 17.3%. A decrease to .10 makes it easier to classify a penalty as reduced and consequently increases the chance of making an error in misclassifying an upheld as a reduced penalty, and, in this instance, the false positive rate is relatively high at 48.3%.

The influence measures for the observations provide further verification that the model fits the data. The great majority of observations have little impact on the deviance statistic (DIFDEV) and, by implication, the overall fit of the the model. The sole exceptions are observations 41, 75, 104, 119, 128, and 139, which, if collectively removed, would increase the deviance statistic from 61.56 to 107.45 (7.44+6.85+11.23+7.98+12.39). Despite these changes the deviance statistic would nevertheless remain statistically insignificant, leading to the acceptance of the null hypothesis that the model fits the data perfectly.

The coefficient estimates and the t-values for the variables are provided in column 2 of Table 4 and are used to determine whether the multivariate logit results support the hypothesized effects for comparisons of reduced and upheld penalties. A positive and statistically significant coefficient for any variable indicates that that particular control situation or finding raises the odds of having a penalty reduced rather than upheld, whereas a negative and statistically significant coefficient indicates that that particular control situation or finding lowers the odds of having a penalty reduced rather than upheld. Furthermore, the effects of the findings are all in comparison to a base case (the '0' category) in which no findings, favourable or unfavourable to the employee, were made (i.e., no issues were mentioned).

The coefficient statistics for the insubordination variables in column 2 of Table 4 partially support the first hypothesis, that findings of insubordination (subordination) lead to more severe (less severe) treatment by a board. For instance, a determination that the employee understood the disciplinary consequences of being disobedient (T_CONSEQ) decreases the odds of receiving a modified penalty by more than 99%. In contrast, a finding that the employee did follow management's instructions (F_DISOB) dramatically increases the odds of a reduced penalty in relation to those cases where no mention of disobedience was made. On the other hand, findings regarding management's issuance of orders (T_ORDER and F_ORDER) have no bearing on board decisions to modify penalties. Neither does a determination that the employee acted disobedient (T_DISOB).

The results for the health and safety variables in column 2 of Table 4 are generally consistent with the second hypothesis, that a board will decide on a harsher (more lenient) penalty when it finds obvious indications that management has (has not) abused its customary jurisdiction over health and safety. A finding that the employee had reasonable grounds to believe that working was dangerous (T_REAS) makes the prospect of a reduced penalty 352 times greater than it would have been had this issue not been addressed at all. Similarly, a board's acknowledgement that the employee genuinely believed that working was dangerous (T_SUBJ) makes a modified penalty 12 times more likely than it would have been had this issue not been mentioned. However, if the board recognizes that the danger was normal to the employee's work (F_ABNORM), the odds of a reduced penalty are 90% lower than in situations where the normality or abnormality of the danger was not discussed. All other findings were statistically insignificant.

The statistics for the general obedience variables outlined in column 2 of Table 4 do not provide consistent support for the the third hypothesis, that a board will decide on a more lenient (harsher) penalty when it finds that the employee has (has not) demonstrated loyalty and obedience to management. As expected, board recognition of the employee's good record (T_GOODREC) signficantly improves the employee's odds of a reduced penalty by 781%, as compared to cases where work record is not assessed. Conversely, board acknowledgement of a bad work record (F_GOODREC) significantly lowers the odds of a modified penalty to 5% of the level associated with cases where work record was not examined. However, board recognition of long service with the employer (T_SERV) unexpectedly reduces the possibility of a modified penalty by 94%. To remain consistent with the third hypothesis, any past or present indications of obedience, deference, or loyalty to the employer should have improved the prospect of less severe treatment from an arbitration or labour relations board.

The coefficient statistics in column 2 of Table 4 show that management misconduct was, for the most part, unrelated to board decisions to reduce the severity of management's disciplinary sanctions. Parameter estimates for three of the four variables, T_INCON, F_INCON, and F_FAIL, are statistically insignificant. Only a finding that management failed to respond to the employee's safety concerns (T_FAIL) is significantly related to the decision to modify management's original penalty. Mention of this factor improves the employee's chances of a reduced penalty by 158 times over situations where management's response to the employee's concerns was not assessed.

Parameter estimates for the control variables in column 2 of Table 4 are also, by and large, statistically insignificant. However, arbitration boards (ARB) were significantly more likely to institute a lesser penalty than labour relations boards. In addition, an employee initially dismissed by management (M_DISMIS) was significantly more likely to obtain a reduced penalty than an employee who had been neither dismissed nor suspended. Similarly, an employee initially suspended by management (M_SUSP) was 158 times more likely to have his or her penalty modified than an employee who had been neither suspended nor dismissed. An employee represented by a lawyer (ATTOR_G) was significantly less likely to obtain a modified penalty than an employee not represented by a lawyer, perhaps because retention of a lawyer improved the odds of a penalty being overturned rather than modified.

Large parameter estimates like those for most of the statistically significant variables in this model would normally imply major effects on the odds of achieving a reduced penalty. However, the large negative value of the intercept term indicates that the chances of receiving a lesser penalty are virtually zero in the absence of any findings by the board and when the control variables are equal to zero. It thus often requires several favourable findings for the employee to make a reduced penalty more likely than an upheld penalty. Even recognition of both a good work record (T_GOODREC) and a failure by management to respond to the employee's safety concerns (T_FAIL) still leaves the employee with 15:1 odds against getting a reduced penalty, when all other variables are equal to zero. Boards only more readily intervene with more lenient punishements in cases where management had severely penalized the employee with either a suspension or a dismissal. For example, the odds of an arbitration board reinstating a dismissed employee and crafting a lesser penalty are, when all other variables are equal to zero, 2:3 rather than 100:1 against.

A comparison of the multivariate results in column 2 of Table 4 with the bivariate results in column 2 of Table 3 provides evidence of both suppressor and confounding effects. The coefficients of the suppressed variables T_CONSEQ, F_ABNORM, F_ GOODREC, ATTOR_G, and M_SUSP are statistically significant in the multivariate logit in column 2 of Table 4, but are not in the bivariate logits in column 2 of Table 3. Hence, a board finding that the employee understood the consequences of disobeying, that the danger was normal for the work, or that the employee had a bad record decreases the odds of having a penalty reduced, even though each of these findings is positively associated with at least one factor that increases these odds. Similarly, retention of an attorney by the employee and a suspension penalty imposed by management respectively decrease and increase the odds of having a penalty reduced, even though each of these situations is associated with factors which have contrary effects on these odds.

The coefficients of the confounded variables F_SUBJ, T_REPORT, and T_ INCON are statistically insignificant in the multivariate logit in column 2 of Table 4, but are statistically significant in the bivariate logits in column 2 of Table 3. These results suggest that not having genuine safety concerns, reporting one's concerns to management, and inconsistent treatment from management have no bearing on the odds of having a penalty reduced, even though these findings are associated with other findings and control conditions which do affect these odds.

The other independent and control variables are either statistically significant or insignificant in both the bivariate and multivariate logits. For example, the coefficients for T_ORDER, F_ORDER, T_DISOB, F_IMMIN, T_OBJ, F_OBJ, F_REAS, F_REPORT, F_INCON, F_FAIL, ATTOR_R, ATT_BOTH, F_GRIEV, F_DMAKER, D_ATTORN, OHSA, and DELAY are not statistically significant in either type of logit. In contrast, the coefficients for F_DISOB, T_REAS, T_SUBJ, T_GOODREC, T_FAIL, ARB, and M_DISMIS are all statistically significant in both types of logits. As a result, no suppressor or confounding effects were evident for any of these variables.

Multivariate Results: OLS Regression Analysis for Suspension Variable

An ordinary least squares (OLS) multiple regression reported in Table 5 was used to determine which independent variables account for the variation in the suspensions decided by boards (ARBDAY). An analysis was performed on 101 cases, after 8 were deleted because of missing observations and 163 were deleted because the final decision exonerated the employee or imposed some penalty other than a suspension. Four variables were omitted from this part of the study, because they were not mentioned (all '0' values) in those awards where suspensions were the final penalty. Specifically, none of the boards in any of the cases found that the danger was abnormal (T_ABNORM) or imminent (T_IMMIN), that the employee had a short service record with the employer (F_SERV), or that management had contravened some term in the employee's contract (T_CA). The regression model with these changes provides an excellent fit of the data: the 36 independent variables account for 87% of the variation in the suspension lengths (R-square=.87). There is less than a one percent probability (probability of F=.0001) of obtaining such a result when there is no actual relationship between any of the independent variables and the suspensions decided by the boards.

The influence diagnostics show that the model fits most of the observations. The fourteenth observation is the only major outlier which has a strong effect (Cook's

D=1.161) on the overall estimation of the regression. However, the model does underestimate the large board suspensions associated with observations 14, 34, 52, and 106 (student residuals=4.37, 4.10, 2.11, and 2.07 respectively), and overestimates the board suspensions associated with observations 18, 33, 66, 81, and 102 (student residuals=-3.53, -2.23, -3.65, -2.71, and -3.50, respectively). Observations 18, 66,and 106 (Hat values=.40, .32, .32) have values that are close to the means of the independent variables, and so exert little influence on the overall estimation of the coefficients. The remaining observations distort the parameter estimates (DFBETAs>1) for variables F_ ORDER (-2.31, 1.13), F_CONSEQ (2.68, -3.13), F_DISOB (1.59), F_OBJ (1.06), T_ REAS (-1.11), F_REAS (-1.09), T_GOODREC (-1.39), F_GOODREC (-1.27), T_ SERV (1.83, 1.06), T_REPORT (1.27), T_FAIL (-1.32), ARB (-1.36, 1.57), ATTOR_G (1.19), ATTOR_R (-1.17), ATT_BOTH (-1.06), DELAY (1.21), D_ATTOR (1.57), and INTER (1.38, 2.70).

The coefficient estimates used to test the hypotheses are provided in Table 5. Negative and statistically significant coefficients indicate that boards decide on shorter suspensions in particular control situations or when particular findings are made. Positive and statistically significant coefficients indicate that boards decide on longer suspensions in particular control situations or when particular findings are made. Each finding also has an impact in relation to a hypothetical base case in which no findings, whether positive or negative for the employee, are made.

Some regression results from Table 5 support the first hypothesis, that findings of insubordination (subordination) lead to harsher (more lenient) treatment from a board, but other results suggest that insubordination plays no role in board decisions or actually aids the employee in securing a lesser penalty. As expected, longer suspensions (41 days) are imposed on employees whom a board regards as disobedient (T_DISOB) than on employees whom the board sees as neither obedient nor disobedient. On the other hand, a finding that the employee understood the consequences of refusing to work (T_CONSEQ)

TABLE 5
ORDINARY LEAST SQUARES MULTIPLE REGRESSION ANALYSIS FOR ARBDAY
(T-VALUES IN PARENTHESES)

	ARBDAY
INTERCEPT	-35.67 (-1.18)
Insubordination	
T_ORDER	-42.79* (-1.74)
F_ORDER	-37.21 (-1.14)
T_CONSEQ	-0.78 (-0.03)
F_CONSEQ	102.42*** (2.74)
T_DISOB	41.46* (1.67)
F_DISOB	41.49 (0.96)
Health and safety as management's prerogative	
F_ABNORM	10.57 (0.58)
F_IMMIN	7.83 (0.32)
T_OBJ	-22.55 (-0.97)
F_OBJ	16.03 (1.32)
T_REAS	-20.37 (-0.62)
F_REAS	-7.29 (-0.49)
T_SUBJ	-14.71 (-1.01)
F_SUBJ	-0.21 (-0.01)
Obedience patterns in workplace relations	
T_GOODREC	-65.39*** (-2.92)
F_GOODREC	-23.97 (-1.10)
T_SERV	69.24** (2.62)

TABLE 5 (Cntd.)
ORDINARY LEAST SQUARES MULTIPLE REGRESSION ANALYSIS FOR ARBDAY
(T-VALUES IN PARENTHESES)

	ARBDAY
T_REPORT	12.72 (0.72)
F_REPORT	-2.11 (-0.15)
Unprofessional management conduct	
F_CA	-18.01 (-0.65)
T_INCON	0.71 (0.02)
F_INCON	12.56 (0.51)
T_FAIL	-30.04* (-1.84)
F_FAIL	-1.04 (-0.06)
Controls	
ARB	27.51** (2.12)
ATTOR_G	6.14 (0.17)
ATTOR_R	-19.84 (-1.29)
ATT_BOTH	-8.88 (-0.23)
F_GRIEV	-21.76 (-1.11)
F_DMAKER	20.90 (0.77)
D_ATTORN	7.73 (0.60)
OHSA	22.69 (1.41)
MGTDAY	1.95* (1.70)
M_DISMIS	5.25 (0.22)
DELAY	0.03 (1.23)
INTER	0.62*** (9.48)

TABLE 5 (Cntd.)
ORDINARY LEAST SQUARES MULTIPLE REGRESSION ANALYSIS FOR ARBDAY
(T-VALUES IN PARENTHESES)

	ARBDAY
R-SQUARE	0.87
R-SQUARE (ADJUSTED)	0.80
F VALUE	12.63***

* = statistically significant at the .10 level (2-tailed test)
** = statistically significant at the .05 level (2-tailed test)
*** = statistically significant at the .01 level (2-tailed test)

is unrelated to board decisions regarding suspension length. Likewise, cases where a determination that the employee either was not ordered to work (F_ORDER) or did not disobey an order (F_DISOB) are no more or less associated with suspension length than cases where no such determinations were made. One contradictory result is that boards opt for shorter suspensions (42 days) when they find that the employer ordered the employee to work (T_ORDER) than they do in cases where no finding on this matter is made. A second contradictory result is that they choose longer suspensions (102 days) in those cases where the employee did not comprehend the punitive consequences of disobeying (F_CONSEQ) than in those where this matter was not discussed.

In Table 5, the second set of coefficients are statistically insignificant, indicating that the health and safety variables are not related to board decisions regarding suspension length. These outcomes are not consistent with the second hypothesis, that a board will decide on a harsher (more lenient) penalty when it finds obvious indications that management has (has not) abused its customary jurisdction over health and safety. Nonetheless, these results may reflect the difficulties of obtaining statistically significant coefficients in a small data set (101 observations) with a relatively large number of variables (36) and thus few degrees of freedom.

The third set of coefficients in Table 5 are also, for the most part, statistically insignificant. They show that, contrary to hypothesis three, the general obedience variables are also generally unrelated to board decisions regarding suspension duration. Nonetheless, suspensions are significantly shorter in cases where the board felt that the employee had a good work record (T_GOODREC) than in cases where this issue was not addressed. In contrast, suspensions are significantly longer in those decisions where the board noted the long service of the employee (T_SERV) than in those decisions where service was not discussed. This latter outcome is not consistent with the third hypothesis that evidence of past obedience would convince boards that the refusal was a temporary aberration in an otherwise harmonious employment relationship and that the employee was therefore worthy of more lenient treatment.

Table 5 shows that, contrary to hypothesis four, findings of management misconduct are also largely unrelated to board choices of suspension length. In particular, the management consistency variables (T_INCON and F_INCON) have no statistically significant effect on board suspension length choices. Furthermore, findings that management had responded to the employee's safety complaints (F_FAIL) or had not violated the employment contract (F_CA) exerted no influence on board suspension choices. Nevertheless, suspensions were 30 days shorter when the boards remarked on management's failure to allay the employee's health and safety concerns (T_FAIL) than when they omitted any mention of this issue. This finding implies that boards want managers to exercise their authority fairly and with at least some concern for due process in addressing employee complaints.

Table 5 shows that most of the parameter estimates for the control variables are statistically insignificant. Retention of an attorney by one (ATTOR_G or ATTOR_R) or both parties (ATT_BOTH) has no significant influence on a board's choice of suspension length. Furthermore, the gender of the employee (F_GRIEV) and of the chief decision-maker (F_DMAKER) have no significant impact on the duration of suspensions selected by boards. Attorney chief decision-makers (D_ATTORN) are not more or less significantly lenient when imposing suspensions than non-attorney chief decision-makers. Suspensions decided after the proclamations of the various occupational health and safety acts (OHSA) are neither significantly shorter nor significantly longer than suspensions decided before. The delay from the refusal to the decision (DELAY) has no significant effect on the final choice of suspension in cases where the employee had been originally suspended (M_SUSP). In the absence of a delay, suspensions are not more significantly extensive for employees originally dismissed (M_DISMIS) than they are for employees originally suspended (M_SUSP). However, the suspensions awarded by boards are six days longer for every ten days delay in cases where the employee had been initially dismissed (INTER). In addition, arbitration boards (ARB) opt for suspensions that are 27 days longer than those opted for by labour relations boards. Boards also opt for significantly longer suspensions (1.95 days for every day) in cases where management had chosen longer suspensions (MGTDAY).

Several suppressed and confounded variables were identified through a comparison of the multiple regression results in Table 5 with the bivariate regression results in column 3 of Table 3. The coefficients of the suppressed variables T_FAIL, T_GOODREC, ARB, and MGTDAY are statistically significant in the multiple regression in Table 5, but are statistically insignificant in the bivariate regressions in column 3 of Table 3. These results suggest that boards impose shorter suspensions when management has failed to investigate or when the employee has a good work record, even though these findings are associated with other control conditions and findings that result in longer suspensions. They also suggest that arbitration boards impose longer suspensions than labour relations boards, even though the other control conditions and findings associated with these boards result in shorter suspensions. They, furthermore, indicate that boards decide on longer suspensions when managers have imposed longer suspensions, even though longer management suspensions are associated with findings or control conditions that result in shorter suspensions.

The coefficients of the confounded variables F_DISOB, T_REAS, F_GOODREC, and T_INCON are statistically insignificant in the multiple regression in Table 5, but are statistically significant in column 2 of Table 3. These results suggests that employee obedience, a reasonable cause to fear danger, a bad work record, and management inconsistency have no effect on board choices of suspension length, even though each of these findings is associated with at least one other finding or control condition which does affect these choices.

The other independent and control variables are either statistically significant or insignificant in both the bivariate and multiple regressions. For instance, the coefficient estimates for F_ORDER, T_CONSEQ, F_ABNORM, F_IMMIN, T_OBJ, F_OBJ, F_REAS, T_SUBJ, F_SUBJ, T_REPORT, F_REPORT, F_CA, F_INCON, F_FAIL, ATTOR_G, ATTOR_R, ATT_BOTH, F_GRIEV, F_DMAKER, D_ATTORN, OHSA, and DELAY are not statistically significant in either set of regression results, whereas those for T_ORDER, F_CONSEQ, T_DISOB, T_SERV, and INTER are all statistically significant in both sets of results. As a result, no suppressor or confounding effects were evident for any of these variables.

In total, 28 of the 36 independent variables have statistically insignificant effects on the dependent variable. The small sample size in relation to the large number of variables is the likeliest explanation for this problem. Alternatively, multicollinearity among the variables may have inflated the standard errors, leaving many of the coefficients statistically insignificant. A Kendall Tau b correlation matrix was therefore examined to assess the extent of association for each pair of the independent variables. These results show that most variables are not strongly associated with each other: the bulk of the correlations are between -.60 and .60. However, there are several anomalies in this overall pattern. For example, long service findings (T_SERV) are positively and strongly associated (.63) with good work record findings (T_GOODREC). Recognition that the employer gave an order (T_ORDER) and that the employee was disobedient (T_DISOB) are also strongly and positively associated (.88). Variables ATT_BOTH and ATTOR_G are also strongly and positively correlated (.94) and so are M_DISMIS and INTER (.94), but these are pairs of main and interaction effects variables and therefore, by definition, collinearity is expected. The variance inflation statistics show that the variance in all the independent variables collectively 'explains' less than two thirds (VIF<3) of the variance in each of the independent variables. The exceptions again comprise the management order (T_ORDER: 7.15) and employee disobedience (T_DISOB: 6.87) variables, the good work record (T_GOODREC: 2.90) and long service (T_SERV: 3.01) variables, and the interaction and main effects variables (ATTOR_G: 14.86; ATT_BOTH: 16.03; M_

DISMIS: 4.27; INTER: 3.86). The tolerance statistics, mirroring the variance inflation statistics, indicate how much of the variation in each independent variable is not accounted for by the other independent variables. Again, they show that between six and 34 percent of the variation in the above mentioned variables cannot be 'explained' by the other independent variables. The eigenvalues also account for little of the variance in the independent variables, except in those variables discussed above. The smallest eigenvalue explains 95% of the variation in the employee attorney represenation variable (ATTOR_G) and 96% of the variation in the employee and employer attorney representation variable (ATT_BOTH). The second smallest explains 85% of the variation in the management order (T_ORDER) and 82% in the employee disobedience (T_DISOB) variables. The third smallest explains 26% and 22% of the variation in the good work record (T_GOODREC) and long service (T_SERV) variables, respectively, and 46% and 27% of the variation in the dismissal (M_DISMIS) and delay/dismissal interaction (INTER) variables, respectively. Together, these findings suggest that the main problem with obtaining statistically significant parameter estimates originates with the number of variables rather than the associations among the variables. Factor analysis provides the solution to both of these problems.

Multivariate Results: Factor analysis for Multiple Regression

Tables 6 and 7 outline the results of a principal component factor analysis that was used to reduce the number and multicollinearity of the independent variables through the creation of orthogonal factors for subsequent ordinary least squares regression analysis. Factors were derived from a correlation rather than a covariance matrix of the 36 independent variables used in the multiple regression. This ensured that the factors with the largest eigenvalues did not predominantly 'explain' those variables with the largest variances.

The eigenvalue one criterion was used to differentiate common factors, for which the covariance of associated explanatory variables is high, from unique factors for which the covariance of associated explanatory variables is low or nonexistent (unique factors do not 'explain' as much of the covariance as a single variable). An examination of the eigenvalues for the 36 principal components reveals that the first thirteen have eigenvalues greater than one, so these are regarded as the common factors throughout the subsequent analysis. Each of these components accounts for between 2.8% and 10.42% of the variation in the independent variables, and together, they account for 70.25% of the variation in these variables.

The Scree plot is an alternative method for differentiating common from unique factors. The exponential or steeply sloping part of this plot corresponds to the higher eigenvalues and therefore the first few principal components assumed to be common factors. The horizontal, flat part of this plot corresponds to the lower eigenvalues and thus the later principal components assumed to be the unique factors. This last part supposedly accounts for none of the correlations between the explanatory variables, but instead represents random variation around an INTERCEPT(error). The Scree plot for this study shows a steeply descending curve over the eigenvalues of the first five components, a gentler fall in the eigenvalues over the next eight, and some levelling off in the eigenvalues of the remaining components. It thus provides some evidence to support the selection of the first thirteen components as the common factors, thereby confirming the validity of the average eigenvalue one test. However, these distinctions remain somewhat arbitrary, because the differences between adjacent eigenvalues are generally small, at least after the fifth component and arguably even before that.

The communality estimates in Table 6 show that the thirteen common factors account for between 49.8% (F_OBJ) and 88.8% (ATT_BOTH) of the variation in the independent variables. However, most of the common factors are weakly associated with all these variables: the variable loadings for factors 2, 7, 8, 9, 10, 11, and 12 are all less than .50 or greater than -.50. Three of the remaining factors are each strongly and, as it happens, positively related to only one variable. For instance, the fifth factor is positively

TABLE 6
ROTATED FACTOR PATTERN

	F1	F2	F3	F4	F5	F6	F7
T_ORDER	-0.10	-0.02	-0.07	**0.91**	-0.05	-0.04	0.11
F_ORDER	**0.55**	0.13	-0.17	-0.21	0.07	-0.10	-0.03
T_CONSEQ	-0.01	-0.11	0.01	0.13	0.02	-0.07	-0.00
F_CONSEQ	**0.76**	0.00	0.00	0.01	0.06	0.03	-0.03
T_DISOB	-0.12	-0.02	-0.04	**0.90**	-0.03	-0.11	0.08
F_DISOB	**0.86**	-0.05	-0.03	-0.15	0.12	-0.04	-0.05
F_IMMIN	-0.08	-0.15	0.03	-0.15	-0.17	-0.23	0.06
F_ABNORM	0.18	0.02	**0.65**	0.18	-0.15	0.09	0.20
T_OBJ	0.00	-0.08	0.12	-0.18	0.00	-0.13	-0.06
F_OBJ	0.03	-0.02	0.16	-0.00	0.13	-0.12	0.02
T_REAS	-0.13	-0.02	0.11	-0.11	0.27	**0.68**	-0.06
F_REAS	0.06	-0.03	**0.51**	-0.02	-0.11	-0.14	0.15
T_SUBJ	-0.03	-0.00	0.27	-0.10	0.06	0.46	0.05
F_SUBJ	0.06	0.09	-0.01	0.19	-0.02	-0.29	-0.00
T_GOODREC	-0.04	0.02	0.16	0.17	-0.01	0.11	**0.84**
F_GOODREC	0.45	0.05	0.08	0.22	0.48	-0.16	-0.30
T_SERV	-0.08	-0.20	-0.10	0.05	0.21	-0.03	**0.84**
T_REPORT	-0.16	0.05	**0.68**	-0.02	0.16	0.06	-0.06
F_REPORT	0.13	-0.26	**-0.62**	0.36	-0.07	0.08	-0.00
F_CA	0.00	0.14	-0.11	-0.19	-0.17	0.05	0.01
T_INCON	**0.72**	0.09	0.11	-0.03	0.15	-0.06	0.01
F_INCON	-0.09	-0.01	-0.03	0.02	0.17	-0.15	0.00
T_FAIL	0.10	0.08	-0.04	0.01	0.13	-0.08	0.05
F_FAIL	0.08	-0.04	**0.59**	-0.18	-0.00	0.40	0.12
ARB	0.01	0.05	0.11	0.00	-0.07	0.03	0.01
ATTOR_G	0.09	**0.90**	0.02	-0.04	-0.01	0.12	-0.02
ATTOR_R	-0.10	**0.57**	0.12	0.03	0.02	-0.37	-0.18
ATT_BOTH	0.10	**0.92**	0.05	-0.06	0.03	0.04	-0.01
F_GRIEV	-0.06	0.07	-0.03	-0.01	-0.09	**0.64**	-0.13
F_DMAKER	0.01	0.08	-0.01	-0.01	-0.04	0.08	0.03
D_ATTORN	0.04	0.02	0.14	0.06	-0.19	0.24	0.07
OHSA	-0.15	0.47	-0.11	0.07	0.08	-0.07	-0.16
MGTDAY	-0.03	0.13	0.24	-0.06	-0.38	-0.16	0.12
M_DISMIS	0.24	-0.01	0.03	-0.05	**0.81**	0.01	0.18
DELAY	0.05	0.35	0.07	0.05	-0.19	0.29	0.05
INTER	0.28	0.11	0.00	-0.18	**0.71**	0.26	0.15
EIGENVALUES	3.75	3.07	2.93	2.43	1.94	1.87	1.72

TABLE 6 (Cntd.)
ROTATED FACTOR PATTERN

	F8	F9	F10	F11	F12	F13	COMMUNALITY ESTIMATES
T_ORDER	0.01	-0.02	-0.08	0.00	0.01	0.01	0.88
F_ORDER	0.26	0.03	-0.17	-0.17	-0.08	-0.00	0.55
T_CONSEQ	0.02	0.11	-0.09	**0.78**	-0.02	-0.00	0.67
F_CONSEQ	-0.09	0.12	0.04	-0.02	-0.03	-0.04	0.62
T_DISOB	-0.01	-0.00	-0.07	-0.07	0.04	0.01	0.87
F_DISOB	-0.00	-0.03	0.05	-0.06	0.03	-0.06	0.80
F_IMMIN	**-0.50**	0.37	-0.36	0.01	-0.09	-0.06	0.69
F_ABNORM	-0.05	-0.10	-0.10	0.19	-0.15	-0.21	0.70
T_OBJ	0.05	0.14	**0.65**	-0.09	0.03	-0.10	0.55
F_OBJ	-0.08	0.02	**-0.53**	0.06	0.28	-0.24	0.49
T_REAS	0.00	-0.02	0.08	0.05	-0.06	-0.09	0.61
F_REAS	0.16	-0.08	**-0.56**	-0.06	-0.17	-0.09	0.72
T_SUBJ	0.07	0.43	0.23	-0.22	-0.12	-0.14	0.64
F_SUBJ	-0.08	-0.45	-0.08	0.44	-0.01	0.32	0.66
T_GOODREC	-0.08	0.05	-0.01	0.03	0.21	-0.01	0.69
T_SERV	0.03	0.04	-0.08	-0.02	0.02	-0.03	0.84
T_REPORT	0.26	0.23	0.15	-0.11	0.07	0.00	0.70
F_REPORT	0.07	-0.11	-0.02	0.21	-0.19	-0.07	0.73
F_CA	0.04	-0.14	-0.02	**0.53**	0.35	-0.15	0.56
T_INCON	0.09	-0.07	-0.08	0.22	-0.05	0.18	0.68
F_INCON	0.01	-0.10	-0.01	0.07	**0.75**	0.02	0.65
T_FAIL	0.04	**0.82**	0.04	0.08	0.03	0.06	0.73
F_FAIL	-0.08	-0.27	-0.05	0.09	0.12	0.16	0.71
ARB	**0.76**	0.10	-0.12	0.07	0.03	-0.19	0.68
ATTOR_G	0.03	0.10	0.02	-0.06	0.02	0.15	0.88
ATTOR_R	-0.03	-0.09	-0.07	0.03	0.00	-0.22	0.59
ATT_BOTH	-0.00	0.00	0.03	-0.03	0.01	0.06	0.88
F_GRIEV	-0.03	-0.02	-0.20	-0.14	0.01	0.29	0.61
F_DMAKER	-0.10	-0.00	0.03	-0.02	-0.03	**0.87**	0.78
D_ATTORN	0.11	0.36	-0.07	-0.01	**0.58**	-0.06	0.62
OHSA	-0.44	-0.00	-0.03	0.22	-0.29	0.05	0.64
MGTDAY	-0.19	-0.19	0.48	-0.09	-0.07	-0.11	0.60
M_DISMIS	0.17	0.15	0.00	-0.09	0.07	0.02	0.82
DELAY	**-0.59**	-0.08	-0.14	-0.01	0.06	-0.12	0.66
INTER	-0.15	-0.06	-0.10	-0.04	-0.05	-0.15	0.80
EIGENVALUES	1.51	1.38	1.25	1.23	1.11	1.03	

F1-13=FACTORS1-13

associated with board findings that management failed to address the employee's concerns (T_FAIL: .50). The sixth factor is positively correlated with cases where the employee was a woman (F_GRIEV: .51). The thirteenth factor is positively associated with cases where the board thought the employee had comprehended the likely punitive consequences of disobedience (T_CONSEQ: .60). Only the first, third, and fourth factors are strongly associated with a subset of variables. Factor three is positively related to cases involving attorney representation, particularly for both parties (ATTOR_G: .57; ATT_ BOTH: .62), and to decisions made after the proclamation of the occupational health and safety statutes (OHSA: .60). Factor five is positively associated with board recognition that the danger construed was normal for the employee's work (F_ABNORM: .63), the employee had a good work record (T_GOODREC: .52), and there was no reasonable cause to be concerned about danger (F_REAS: .59). Factor one is primarily a contrast between M_DISMIS (.59) and INTER (.59), on the one hand, and T_ORDER (-.55) and T DISOB (-.57), on the other. High scores on this factor thus arise in cases where the employee was originally dismissed, required to wait a long time for the award, and found not to have disobeyed a management order at the time of the refusal.

The varimax rotation method was used to transform the factor loadings discussed above, so that each independent variable became strongly associated (high loading in Table 6) with one factor but not another (low or negligible loading in Table 6). Each rotated factor is thus supposed to account for a mutually exclusive set of highly correlated explanatory variables. For example, Table 6 shows that the first factor accounts for much of the variation in F_ORDER (.55), F_CONSEQ (.76), and F_DISOB (.86), with which it is highly correlated, but for little in ARB (.01) and F_DMAKER (.01), with which it is hardly associated at all. However, the varimax rotation was not completely successful in generating mutual orthogonality: some of the variables in Table 6 are moderately correlated with one or more factors and highly correlated with none. For example, F_GOODREC is moderately correlated with the first (.45), fifth (.48), and sixth (-.30) factors. The OHSA variable is also moderately correlated with the second (.47) and eighth (-.44) factors. Similar association patterns were identified for other variables, including T_SUBJ and F_SUBJ.

Each factor in Table 6 corresponds to a particular set of findings and circumstances that characterize many of the cases. The first factor, the SUBORDINATION FACTOR, represents cases where the employee was not found guilty of insubordination (F_ORDER; F_CONSEQ; F_DISOB) but management was found to have acted inconsistently in its administration of rules (T_INCON). The second factor, the LAWYER FACTOR, corresponds to those cases where both parties retained the services of a lawyer (ATTOR_G; ATTOR_R; ATT_BOTH). The third factor, the PROCEDURES FACTOR, pertains to cases where a board thought that the danger contemplated was normal for the work (F_ABNORM), the employee's safety concerns were not reasonable (F_REAS), the employee's report of these concerns was, however, satisfactory (T_REPORT), and management's reactions to these concerns was appropriate (F_FAIL). Factor four, the INSUBORDINATION FACTOR, involves decisions where the employee was found guilty of disobeying (T_DISOB) an order from management (T_ORDER). The fifth factor, the DISMISSAL FACTOR, represents cases where management had initially dismissed the employee (M_DISMIS) and some time had elapsed between the refusal and the award (DELAY). The sixth factor, the FEMALE FACTOR, involves situations where a female complainant or grievor (F_GRIEV) had, according to a board, reasonably believed that her work was hazardous (T_REAS). Factor seven, the GOOD BEHAVIOUR FACTOR, pertains to awards where the employee's long service (T_SERV) and good record (T_GOODREC) were acknowledged by a board. Factor eight, the ARBITRATION FACTOR, involves arbitration awards (ARB) that were decided after little delay (DELAY) and where no determination was made that the hazards were not imminent (F_IMMIN). Factor nine, the NONINVESTIGATION FACTOR, encompasses those cases where a board cited management's failure to respond to the employee's safety concerns (T_FAIL).

The tenth factor, the OBJECTIVE PROOF FACTOR, involves decisions in which a board decided that there was objective proof of danger (T_OBJ) and did not decide that the fear of danger was unreasonable (F_REAS). The eleventh factor, the UNDERSTANDING FACTOR, covers situations where a board felt that management had not violated the employee's contract (F_CA) and the employee had known the likely consequences of insubordination (T_CONSEQ). The twelfth factor, the FAIR TREATMENT FACTOR, corresponds to cases where a board chaired by a lawyer (D_ATTORN) found that management had not behaved inconsistently (F_INCON). The thirteenth and final factor, the FEMALE CHAIRPERSON FACTOR, involves cases decided by boards with women as their chairpersons (F_DMAKER).

Table 7 presents the results of an ordinary least squares regression that was used to determine whether, and to what extent, the rotated common factors could account for the variation in the length of the suspensions decided by the boards. The F statistic (probability of F=.0001) indicates that, when the population coefficients for the independent variables are all zero, the probability of estimating the sample coefficients in Table 7 is less than one percent. The R-square statistic shows that these factors together contribute 62% of the variation in the dependent variable, which is almost as high as the variation accounted for by the full model with the original variables.

Table 7 shows that the only coefficient estimates which are statistically insignificant are those for the LAWYER, PROCEDURES, UNDERSTANDING, and FAIR TREATMENT FACTORS. Positive and statistically significant coefficients for the SUBORDINATION, DISMISSAL, FEMALE, and GOOD BEHAVIOUR FACTORS indicate that these variable combinations are positively related to the dependent variable. Suspensions therefore increase when boards find that the employee was not insubordinate even though management was inconsistent (SUBORDINATION FACTOR). They also increase when the employee was originally dismissed by management and delayed in obtaining a decision (DISMISSAL FACTOR). Tougher suspensions are also

TABLE 7
MULTIPLE REGRESSION FOR THE 13 COMMON FACTORS
(T-VALUES IN PARENTHESES)

	ARBDAY
INTERCEPT	30.58*** (4.50)
FACTOR 1: SUBORDINATION	35.62*** (5.22)
FACTOR 2: LAWYER	5.78 (0.84)
FACTOR 3: PROCEDURES	1.81 (0.26)
FACTOR 4: INSUBORDINATION	-18.25*** (-2.67)
FACTOR 5: DISMISSAL	59.55*** (8.73)
FACTOR 6: FEMALE	21.00*** (3.07)
FACTOR 7: GOOD BEHAVIOUR	15.25** (2.23)
FACTOR 8: ARBITRATION	-16.55** (-2.42)
FACTOR 9: NONINVESTIGATION	-13.58** (-1.99)
FACTOR 10: OBJECTIVE PROOF	-12.59* (-1.84)
FACTOR 11: UNDERSTANDING	-2.32 (-0.34)
FACTOR 12: FAIR TREATMENT	-2.46 (-0.36)
FACTOR 13: FEMALE CHAIRPERSON	-16.23** (-2.38)
R-SQUARE	0.62
R_SQUARE (ADJUSTED)	0.56
F VALUE	11.17***

* = statistically significant at the .10 level (2-tailed test)
** = statistically significant at the .05 level (2-tailed test)
*** = statistically significant at the .01 level (2-tailed test)

decreed for female employees who reasonably believed their work was dangerous (FEMALE FACTOR), and for employees with a good work record and long service (GOOD BEHAVIOUR FACTOR).

The INSUBORDINATION, ARBITRATION, NONINVESTIGATION, OBJECTIVE PROOF, and FEMALE CHAIRPERSON FACTORS are all statistically significant and negatively related to suspension duration as decided by boards. A finding that management failed to investigate (NONINVESTIGATION FACTOR), that the employee acted insubordinate (INSUBORDINATION FACTOR), or that the danger was objectively proven (OBJECTIVE FACTOR) therefore reduces the suspension awarded by a board. Suspensions are also shorter when awarded by arbitration boards (ARBITRATION FACTOR) or by any board headed by a woman (FEMALE CHAIRPERSON FACTOR).

Most of the common factor regression results in Table 7 are similar to the multiple regression results in Table 5. Specifically, a finding that management failed to investigate is still associated with a shorter suspension. The health and safety findings remain, for the most part, unassociated with board choices of suspension. A finding that management acted consistent or did not violate the employment contract also continues to have no statistically significant impact on board choices of suspension. Despite these similarities, there are some notable differences between the two sets of results. In the original regression, disobedience findings are positively, and good work record findings are negatively, associated with board suspension decisions, but these relationships are reversed in the common factor regression. This switch confirms that the disobedience and management order findings, both with high positive loadings on the INSUBORDINATION FACTOR, are highly collinear. It also confirms that the good record and long years of service findings, both with high positive loadings on the GOOD BEHAVIOUR FACTOR, are highly collinear.

Other variables are statistically insignificant in the original regression and statistically significant in the common factor regression, reflecting both the reduction in the number of variables and the creation of the common factors. For example, the common factor regression results show that boards with female chairs opt for shorter suspensions than boards with male chairs, but the original regression results show no relationship between gender and suspension choice. The original regression results also suggest that boards do not alter their suspension decisions when they find that there was objective evidence of danger or that the employee had no reasonable cause to fear danger. In contrast, the common factor regression results indicate that boards decide on shorter suspensions when they find objective evidence of danger and do not find that the employee had no reasonable cause to fear danger.

Some of the common factor regression results fully support the hypotheses. For instance, findings that management had failed to investigate or that there was objective evidence to verify the danger are both associated with shorter suspensions, as per hypotheses four and two, respectively. Employees penalized with a dismissal received longer suspensions than other employees, also as expected. On the other hand, employees found guilty of insubordination should have received longer suspensions, but actually received shorter ones, than other employees. Conversely, employees absolved of any insubordination should have received shorter suspensions, but actually received longer ones, than other emloyees. Employees whose long years of service and good work records were acknowledged by boards should have received shorter suspensions, in accordance with hypothesis three, but actually received longer ones. Female employees whom boards felt had reasonable cause to fear danger should have also received shorter suspensions, in accordance with hypothesis two, but again actually received longer ones.

The unexpected results described previously could reflect the influence of variables which are moderately rather than strongly associated with each factor. This, however, remains unlikely, because most factors are not moderately related to any additional variables. Furthermore, the few moderate associations which do exist are consistent with, and would be expected to reinforce, the effects on board suspension choices of variables that are strongly related to each factor. For instance, the INSUBORDINATION FACTOR is strongly and positively associated with indications of the employee's insubordination and also moderately and positively associated with recognition of a bad record (.22) and an inadequate report of safety concerns (.36), which are all unfavourable findings for the employee.

Multivariate Results: Factor Analysis for Multinomial Logit

A principal components factor analysis was also employed to reduce the number of independent variables for a multinomial logistic analysis of PENALTY, a trichotomous dependent variable with categories for overturned penalties (CATEGORY 1), reduced penalties (CATEGORY 2), and upheld penalties (CATEGORY 0 and the BASE COMPARISON CATEGORY). Factors were derived from a correlation matrix of the 39 independent variables in the study, so as to ensure that the factors with the largest eigenvalues did not predominantly 'explain' those variables with the largest variances.

The eigenvalue one criterion was again used to differentiate common factors from unique factors. Table 8 shows that the first fourteen of the 39 principal components have eigenvalues greater than one, so these are regarded as the common factors throughout the subsequent analysis. However, this choice remains somewhat arbitrary, because the eigenvalue differences are small after the ninth component.

Each of the fourteen common factors, as listed in Table 8, accounts for between 2.7% and 11.1% of the variation in the independent variables, and together, they account for 65% of the variation in these variables. The communality estimates, again outlined in Table 8, also show that the common factors contribute between 44.5% (T_IMMIN) and 91.9% (ATT_BOTH) of the variation in the independent variables. The first factor is predominantly a contrast between T_ORDER, T_DISOB, F_SUBJ, and F_REPORT, which are strongly and positively related to this factor, on the one hand, and T_ REAS, T_SUBJ, and T_REPORT, which are strongly and negatively associated, on

TABLE 8
ROTATED FACTOR PATTERN

	F1	F2	F3	F4	F5	F6	F7
T_ORDER	-0.12	**0.83**	0.07	-0.10	-0.12	-0.00	0.14
F_ORDER	-0.12	-0.28	-0.09	**0.52**	0.07	-0.15	-0.14
T_CONSEQ	-0.22	0.46	-0.13	0.00	0.23	0.17	-0.07
F_CONSEQ	0.01	0.00	0.03	**0.74**	-0.07	0.03	0.13
T_DISOB	-0.19	**0.83**	0.06	-0.12	-0.11	0.07	0.13
F_DISOB	-0.11	0.16	0.02	**0.77**	-0.05	-0.12	0.04
T_IMMIN	0.33	-0.04	-0.07	-0.06	-0.09	-0.04	-0.15
F_IMMIN	-0.13	-0.02	-0.02	-0.09	-0.07	0.20	0.13
T_ABNORM	0.15	-0.02	0.11	0.07	-0.08	-0.19	0.03
F_ABNORM	-0.04	0.05	0.04	0.04	-0.07	**0.71**	0.09
T_OBJ	0.15	-0.07	0.10	-0.04	0.04	-0.16	0.11
F_OBJ	-0.15	0.09	0.00	-0.03	-0.03	0.25	0.12
T_REAS	**0.61**	-0.10	-0.06	-0.01	0.07	-0.27	-0.09
F_REAS	-0.20	0.02	-0.04	-0.05	0.08	**0.72**	0.03
T_SUBJ	**0.77**	-0.09	-0.00	-0.05	-0.04	-0.13	0.03
F_SUBJ	**-0.65**	0.22	-0.02	0.00	0.06	0.22	-0.09
T_GOODREC	-0.00	0.09	0.01	0.00	-0.08	0.07	**0.85**
F_GOODREC	-0.08	0.25	-0.01	0.29	0.32	0.02	-0.05
T_SERV	-0.03	0.11	-0.16	0.02	0.17	0.06	**0.83**
F_SERV	-0.11	-0.12	-0.11	-0.02	0.14	-0.11	-0.07
T_REPORT	**0.76**	-0.07	0.03	-0.12	0.11	0.15	-0.02
F_REPORT	**-0.50**	0.41	-0.06	0.02	-0.13	-0.10	0.08
T_CA	-0.00	-0.13	-0.04	0.04	0.06	-0.09	-0.09
F_CA	-0.08	-0.01	0.04	-0.00	-0.02	-0.01	-0.06
T_INCON	0.00	0.05	-0.05	**0.58**	0.21	0.18	-0.12
F_INCON	-0.16	-0.09	-0.05	-0.06	0.15	-0.13	0.01
T_FAIL	**0.61**	0.15	-0.09	0.10	0.10	-0.07	-0.03
F_FAIL	0.01	-0.20	0.03	-0.03	-0.02	0.34	-0.05
ARB	-0.03	0.24	-0.06	0.14	-0.08	0.19	-0.05
ATTOR_G	0.03	0.03	**0.85**	0.01	0.14	-0.07	-0.11
ATTOR_R	-0.12	0.00	**0.57**	-0.05	-0.23	0.12	0.08
ATT_BOTH	-0.02	0.03	**0.94**	-0.00	0.07	0.02	-0.06
F_GRIEV	0.12	0.01	-0.03	-0.02	-0.03	-0.05	-0.04
F_DMAKER	-0.01	-0.11	-0.02	-0.03	0.09	-0.25	-0.05
D_ATTORN	0.17	0.23	-0.00	-0.08	0.00	0.08	-0.02
OHSA	-0.01	-0.01	0.20	-0.02	-0.06	-0.02	-0.04
M_SUSP	-0.06	0.29	0.07	0.00	**-0.76**	0.01	0.00
M_DISMIS	0.09	0.05	0.08	0.03	**0.79**	0.00	0.12
DELAY	-0.00	-0.04	0.15	-0.01	-0.29	0.01	0.08
EIGENVALUES	4.36	2.63	2.47	2.06	1.97	1.74	1.64

TABLE 8 (Cntd.)
ROTATED FACTOR PATTERN

	F8	F9	F10	F11	F12	F13	F14	COMM. ESTIMATES
T_ORDER	-0.13	0.01	-0.10	-0.12	-0.06	0.05	-0.04	0.81
F_ORDER	-0.15	0.00	-0.26	0.04	-0.08	0.12	-0.03	0.54
T_CONSEQ	0.06	-0.14	0.05	0.07	0.07	0.01	0.35	0.53
F_CONSEQ	0.01	0.01	0.00	-0.07	0.02	-0.10	-0.07	0.60
T_DISOB	-0.09	0.08	-0.06	-0.09	-0.04	0.08	-0.03	0.83
F_DISOB	-0.15	-0.02	-0.01	0.03	-0.03	-0.16	0.09	0.72
T_IMMIN	0.27	0.08	-0.12	0.09	0.01	-0.26	0.32	0.44
F_IMMIN	0.14	0.01	-0.05	0.05	-0.05	0.22	**0.60**	0.53
T_ABNORM	-0.18	0.00	-0.00	-0.12	-0.00	-0.12	**0.73**	0.69
F_ABNORM	-0.02	-0.03	0.11	-0.07	-0.09	0.04	-0.03	0.57
T_OBJ	-0.06	0.00	0.22	**0.71**	-0.18	-0.10	-0.08	0.70
F_OBJ	0.04	0.43	0.02	-0.08	0.40	0.05	0.05	0.48
T_REAS	0.05	-0.12	0.10	-0.12	-0.06	0.12	0.19	0.59
F_REAS	-0.12	0.02	-0.07	-0.13	0.02	-0.00	0.04	0.62
T_SUBJ	-0.03	-0.09	0.05	-0.01	-0.11	0.07	-0.07	0.67
F_SUBJ	0.21	0.03	0.06	-0.08	0.06	0.01	0.09	0.61
T_GOODREC	-0.02	-0.04	-0.06	-0.02	-0.03	0.10	0.12	0.78
F_GOODREC	0.05	**0.62**	0.11	0.03	0.11	-0.05	-0.03	0.69
T_SERV	0.00	0.00	-0.02	0.02	0.00	-0.05	-0.02	0.77
F_SERV	-0.08	**0.73**	0.01	-0.09	-0.12	0.15	0.00	0.68
T_REPORT	0.03	-0.04	0.16	0.02	-0.04	-0.07	-0.00	0.68
F_REPORT	0.07	0.02	-0.08	-0.13	0.05	-0.22	-0.14	0.58
T_CA	-0.08	-0.08	-0.12	**0.73**	-0.00	0.16	0.02	0.65
F_CA	0.03	-0.08	-0.00	-0.02	**0.75**	0.16	-0.04	0.62
T_INCON	0.10	0.12	0.04	0.05	-0.03	0.19	-0.02	0.51
F_INCON	-0.05	0.10	0.19	-0.12	**0.57**	-0.15	-0.00	0.51
T_FAIL	0.35	0.00	-0.20	0.20	-0.03	-0.04	-0.02	0.65
F_FAIL	-0.14	0.05	**0.63**	-0.12	0.14	0.12	0.11	0.65
ARB	**-0.63**	-0.06	-0.13	0.21	0.20	0.01	0.00	0.64
ATTOR_G	0.06	-0.16	0.09	0.04	-0.03	0.14	-0.00	0.84
ATTOR_R	0.18	0.39	-0.15	0.03	0.02	-0.17	0.02	0.67
ATT_BOTH	0.10	-0.04	-0.03	-0.01	0.03	0.04	0.04	0.91
F_GRIEV	0.09	-0.00	**0.71**	0.15	0.08	-0.11	-0.13	0.60
F_DMAKER	0.22	0.14	0.45	-0.20	-0.29	0.37	0.01	0.63
D_ATTORN	-0.25	0.04	-0.10	0.16	0.19	**0.58**	0.01	0.58
OHSA	**0.75**	-0.05	-0.00	-0.02	0.11	0.05	-0.01	0.63
M_SUSP	0.00	-0.03	0.05	-0.05	-0.09	-0.00	0.06	0.70
M_DISMIS	-0.00	0.24	0.01	0.03	-0.03	-0.17	-0.07	0.76
DELAY	0.21	0.08	0.04	0.00	0.00	**0.58**	0.02	0.51
EIGENVALUES	1.43	1.32	1.28	1.21	1.14	1.07	1.00	

F1-14=FACTORS1-14

the other. For this reason, an observation receives a high score on this factor whenever a board finds that the employee was ordered by management (T_ORDER), acted disobedient (T_DISOB), was not motivated by health and safety concerns in refusing to work (T_SUBJ), and failed to report any concerns to management (F_REPORT). Conversely, an observation receives a low score when a board determines that the employee honesty believed that his or her work was hazardous (T_SUBJ), this belief was reasonable (T_REAS), and was reported to management (T_REPORT).

The second factor is not strongly and positively correlated with any independent variables and is only strongly and negatively correlated to T_ORDER and T_DISOB. As a result, a negative score on this factor is likely for those cases where a board finds that the employee disobeyed an order. The third factor is strongly associated with only ATTOR_R, ATTOR_G and ATT_BOTH, and these relationships are positive. This factor consequently receives a high score whenever the employer and the employee are represented by legal counsel. The remaining factors are not strongly related to any variables, so their scores change little in response to different findings and control conditions in the cases. The sole exception is the fifth factor which is strongly and positively related to M_DISMIS. An observation thus receives a high score on this factor in cases where the employee had been originally dismissed by management.

A varimax rotation method was used to transform the factor loadings, so that each independent variable became strongly associated with one factor but not another. Complete details of the rotated factor pattern are given in Table 8. It shows that the first factor, the STATUTORY PROCEDURES FACTOR, accounts for much of the variation in T_REAS (.61), T_SUBJ (.77), F_SUBJ (-.65), T_REPORT (.76), F_REPORT (-.50), and T_FAIL (.61). The second rotated factor, the INSUBORDINATION FACTOR, accounts for most of the variation in T_ORDER (.83) and T_DISOB (.83), but for only some of the variation in the other variables. The third factor, the LAWYER FACTOR, has high positive correlations with ATTOR_G (.85), ATTOR_R (.57), and ATT_BOTH (.94), and the fourth, the SUBORDINATION FACTOR, with F_ORDER (.52), F_CONSEQ (.74), F_DISOB (.77), and T_INCON (.58). The fifth factor, the DISMISSAL FACTOR, is strongly and negatively associated with M_SUSP (-.76), but strongly and positively associated with M_DISMIS (.79). There are high, positive correlations for F_ABNORM (.71) and F_REAS (.72) on the sixth factor, the NORMAL AND UNREASONABLE FACTOR, and for T_GOODREC (.85) and T_SERV (.83) on the seventh, the GOOD BEHAVIOUR FACTOR. The eighth factor, the OHSA FACTOR, is negatively related to ARB (-.63) and positively related to OHSA (.75). Correlations are high and positive for F_GOODREC (.62) and F_SERV (.73) on the ninth factor, the BAD BEHAVIOUR FACTOR, and for F_FAIL (.63) and F_GRIEV (.71) on the tenth, the INVESTIGATION FOR WOMEN FACTOR. The variables T_OBJ (.71) and T_CA (.73) are strongly and positively correlated with the eleventh factor, the CONTRACT VIOLATION FACTOR, while F_CA (.75) and F_INCON (.57) are strongly and positively correlated with the twelfth, the PROPER MANAGEMENT CONDUCT FACTOR. Finally, correlations are high and positive for DELAY (.58) and D_ATTORN (.58) on the thirteenth factor, the LAWYER DELAY FACTOR, and for F_IMMIN (.60) and T_ABNORM (.73) on the fourteenth, the ABNORMAL DANGER FACTOR. No two factors are together highly correlated with any one variable. Some variables are nonetheless moderately correlated with a second factor, as, for example, are: F_REPORT (.41) and M_SUSP (.29) with the INSUBORDINATION FACTOR. The varimax rotation was not therefore completely successful at creating orthogonal common factors.

The fourteen common factors were employed in a multinomial logit, as outlined in Table 9, to predict the chances of reduced versus upheld penalties (CATEGORY 2 vs. 0) and overturned versus upheld penalties (CATEGORY 1 vs. 0). Table 9 shows that the deviance statistic for this model is highly statistically insignificant (probability=1.0), and so the null hypothesis that the model fits the data perfectly cannot be rejected. It also shows that most of the coefficient estimates for the common factors are also statistically

TABLE 9
MULTINOMIAL LOGIT FOR THE 14 COMMON FACTORS
(T-VALUES IN PARENTHESES)

	PENALTY	
	Overturned 1	Reduced 2
INTERCEPT	-2.64***	-0.86***
	(-3.67)	(-3.03)
FACTOR 1: STATUTORY PROCEDURES	4.37***	1.67***
	(6.88)	(4.61)
FACTOR 2: INSUBORDINATION	-1.42***	0.25
	(-3.07)	(1.11)
FACTOR 3: LAWYER	0.70**	0.20
	(2.06)	(0.80)
FACTOR 4: SUBORDINATION	1.41***	1.30***
	(3.55)	(3.73)
FACTOR 5: DISMISSAL	0.48	0.40*
	(1.36)	(1.74)
FACTOR 6: NORMAL & UNREASONABLE	-2.40***	-0.36
	(-3.58)	(-1.44)
FACTOR 7: GOOD BEHAVIOUR	0.73**	1.03***
	(2.07)	(4.23)
FACTOR 8: OHSA	0.31	-0.23
	(0.91)	(-.88)
FACTOR 9: BAD BEHAVIOUR	-1.85**	-0.09
	(-2.37)	(-0.38)
FACTOR 10: INVESTIGATION FOR WOMEN	-0.69**	-0.29
	(-2.20)	(-1.09)
FACTOR 11: CONTRACT VIOLATION	0.94***	0.26
	(3.15)	(0.85)
FACTOR 12: PROPER MGT. CONDUCT	-1.51***	-0.40
	(-2.57)	(-1.33)
FACTOR 13: LAWYER DELAY	0.07	0.01
	(0.21)	(0.03)
FACTOR 14: ABNORMAL DANGER	0.77	0.31
	(0.90)	(0.74)
Deviance statistic	201.23 (probability=1.0)	

*=statistically significant at the .10 level (2-tailed test)
**=statistically significant at the .05 level (2-tailed test)
***=statistically significant at the .01 level (2-tailed test)

significant, indicating that these factors do differentiate one type of penalty outcome from another.

The coefficient estimates for the STATUTORY PROCEDURES, SUBORDINATION, and GOOD BEHAVIOUR FACTORS, as listed in Table 9, are all positive and statistically significant in both comparisons of penalties. As a result, positive values on any one of these factors improves the employee's chances of having a penalty either reduced or overturned rather than sustained. For the STATUTORY PROCEDURES FACTOR, more lenient treatment follows whenever a board recognizes that the employee was motivated by a genuine fear of danger, this fear was reasonable, this fear was reported to management, and management failed to act on this information. The SUBORDINATION FACTOR results demonstrate that more lenient treatment occurs when the board finds few signs of employee insubordination and clear indications of management inconsistency in the administration of rules. The coefficients for the GOOD BEHAVIOUR FACTOR show that both reduced and overturned penalties are more likely if the board finds that the employee had a good work record and long service with the firm.

Coefficient estimates for the INSUBORDINATION, NORMAL AND UNREASONABLE, BAD BEHAVIOUR, INVESTIGATION FOR WOMEN, and PROPER MANAGEMENT CONDUCT FACTORS in column 1 of Table 9 are negative and statistically significant for comparisons of overturned and sustained penalties only. As a result, positive values on any one of these factors decrease the odds of having a penalty overturned rather than sustained. For the INSUBORDINATION FACTOR, there is less chance of an overturned penalty if a board finds that the employee disobeyed (T_ DISOB) an order (T_ORDER). Results for the NORMAL AND UNREASONABLE FACTOR show that full exoneration is less likely when a board feels there was no reasonable cause to fear danger (F_REAS) and the danger feared was normal to the work (F_ABNORM). Results for the BAD BEHAVIOUR FACTOR indicate that full exoneration is less probable when a board decides that the employee had a poor work record and short service with his or her employer. For the INVESTIGATION FOR WOMEN FACTOR, the odds of a penalty being overturned also decline when the employee is a woman and a board determines that management adequately responded to her health and safety concerns. Statistics for the PROPER MANAGEMENT CONDUCT FACTOR indicate that the chances of full exoneration fall when a board decides that management has neither violated the contract nor acted inconsistent.

Parameter estimates for the LAWYER and CONTRACT VIOLATION FACTORS in column 1 of Table 9 indicate that findings on these variables increase the chances of having a penalty overturned. Results for the LAWYER FACTOR indicate that, if both parties are represented by a lawyer, the chance of having a penalty rescinded rises. Statistics for the CONTRACT VIOLATION FACTOR show that, when a board acknowledges objective evidence of hazards and management violations of the contract, the odds of having a penalty overturned improve.

The parameter estimates for the DISMISSAL FACTOR in Table 9 are only positive and statistically significant for comparisons of reduced and upheld penalties in column 2. This finding shows that the chances of having a penalty modified increase for employees originally dismissed and decrease for employees originally suspended.

Table 9 shows that the parameter estimates for the OHSA, LAWYER DELAY, and ABNORMAL DANGER FACTORS are all statistically insignificant. The findings for the OHSA FACTOR suggest that a case decided after the proclamation of an occupational health and safety act is no more or less likely than a case decided before to result in an overturned or reduced penalty. This factor also indicates that arbitration boards are not more likely than labour relations boards to opt for reduced or overturned instead of upheld penalties. Results for the LAWYER DELAY FACTOR show that the length of the delay has no influence on a board decision to either overturn or modify a penalty, when the chief decision-maker is a lawyer. The findings for the ABNORMAL DANGER FACTOR suggest that cases where the danger is found to be abnormal but not imminent are treated no differently from other cases.

Most of the results for the common factor logit in Table 9 are similar to the original multivariate logits in Table 4, with a few major exceptions. Some of the variables that are not statistically significant in the original logits are nevertheless statistically significant in the common factor logit, reflecting both the reduction in the the number of variables and the creation of the common factors. For example, the logit results in column 1 of Table 4 show that the odds of having a penalty overturned are unaffected by whether the parties have attorney representation or by whether the employee is female. They also show that these odds are unaffected by management investigation, objective proof of danger, or contract violation findings. In contrast, the logit results in column 1 of Table 9 indicate that the odds of having a penalty overturned decline when a board finds that management did investigate the safety concerns of a female employee. These results also indicate that the odds of having a penalty overturned improve when both parties are represented by an attorney or when a board finds that there was objective proof of danger and that management had violated the employment contract.

The direction of the indicated effect for long years of service is also different in the common factor results in column 2 of Table 9 than it is in the original logit results in column 2 of Table 4. The original logit shows that long years of service decreases the odds of getting a penalty reduced, but the common factor logit indicates the opposite. This switch confirms that the good record and long years of service findings, both with high positive loadings on the GOOD BEHAVIOUR FACTOR, are highly collinear.

In aggregate, the multinomial results for the common factors provide support for the hypotheses. They show the clear role of insubordination in leading to harsher penalties, whenever proven, and to more lenient penalties, whenever disproven (hypothesis one). The findings also show that boards defer to management on health and safety, whenever there is no reasonable cause to fear dangers that are normal to the work (hypothesis two). If, on the other hand, a board is convinced of the sincerity of the employee's safety concerns, feels that these concerns were reasonable, notes that they were adequately conveyed to management, and that management neglected to investigate them, then the employee's chances of more lenient treatment rise dramatically (hypotheses two, three, and four). The results also demonstrate how considerations of the employee's past obedience and loyalty, as represented by long service and good record, help improve the odds of better treatment, whereas the combination of short service and bad record have the opposite effect (hypothesis three). Boards also examine the behaviour of management in making their decisions, preferring harsher penalties on those occasions where management has neither acted unfairly nor violated the employment contract (hypothesis four).

Results Summary and Discussion

This study shows that board decisions to either overturn or reduce management's penalties are affected by the insubordination, health and safety, general obedience, and unprofessional management conduct variables in the hypothesized manner. However, at least one alternative interpretation is consistent with these findings. It is possible, for example, that boards do not make decisions on the basis of the factors indicated by the independent variables, even though they do use them to justify their decisions to the parties. This study also shows that board decisions involving suspension choices are not generally affected by the independent variables in the hypothesized manner. These unexpected findings most likely reflect the small sample size analyzed and the influence of particular outliers on the estimation of the coefficients.

1. Insubordination

The elements of insubordination were considered in fewer than half of the cases in the study, but board findings on these issues proved to be important determinants of the final decisions. Employees found to have been insubordinate were frequently treated more harshly by boards than were other employees for whom insubordination was not an issue. Recognition that management had given an order decreased the odds of full exoneration, but had no effect on the chances of a reduced penalty. A finding that the employee understood the punitive consequences of disobedience eliminated any possibility of full restitution and reduced the chances of a lesser penalty. Recognition of disobedience by itself had no effect on boards' selection of penalties, but the additive effects of this finding and an acknowledgement of management's having given an order decreased the odds of getting a penalty either overturned or reduced. In contrast to these situations, employees absolved of any insubordination charges were generally treated more leniently than were employees for whom insubordination was not an issue. Failure to understand the consequences of insubordination guaranteed full exculpation or a lesser penalty. Obedience improved one's chances of full exculpation or a lesser penalty, while management's failure to order an employee to work increased the odds of a full exculpation. The addition of all three findings, together with management inconsistency in the administration of rules, greatly decreased the odds of a penalty being upheld rather than overturned or reduced.

Insubordination received less emphasis from the boards in this study than it did from the boards in Gross and Greenfield's (1985) U.S. study, in which 153 out of 154 right to refuse unsafe work cases were treated as insubordination events with health and safety as a mitigating factor. Evidence from this study nevertherless suggests that insubordination findings increase the odds of having a penalty upheld. It therefore seems likely that boards view insubordination as a serious offense that merits severe treatment, as stated in hypothesis one. Alternatively, boards may make their decisions on the basis of other criteria, such as health and safety, choosing only to mention insubordination as a justification for their decisions after they have been made. Boards may do this to maintain their credibility with the union, if one is involved, and the employee, who may be more willing to accept that the employee had committed a traditional offense like insubordination than had been 'unreasonable' (i.e., 'crazy', 'foolish', or 'stupid') in thinking his or her work was unsafe. They may also do this to reassure management that its control rights are being protected. An arbitrator may be particularly keen to maintain his or her popularity with the parties, because of his or her dependence upon being invited back by both parties for further arbitrations. However, even if these explanations are true and boards do not really consider insubordination in making their decisions, insubordination would still play a key role in legitimizing disciplinary actions that might be otherwise difficult for society to accept in right to refuse unsafe work cases.

The insubordination findings were not all consistent with the first hypothesis. Insubordination had unexpected effects on board choices of suspension length, when controlling for other variables. For instance, employees who had been ordered to work by management received shorter suspensions, even though disobedient employees received longer suspensions as anticipated. Employees who did not know they would likely be punished for insubordination were also given longer suspensions, contrary to expectation. Longer suspensions were also imposed on employees found innocent on all three dimensions of insubordination, whereas shorter suspensions were imposed on employees found guilty on all three dimensions.

Insubordination's effects on suspension length could reflect the problems inherent in generalizing from a small sample that is unrepresentative of the population of cases. These effects may also reflect outlier observations with an especially strong influence on the estimation of the coefficients for the insubordination variables. The influence diagnostics (DFBETAs) do, in fact, indicate that the coefficient estimate for F_DISOB is overinflated, suggesting a strong positive association between a finding of obedience and board choice of suspension where none actually exists. As a result, insubordination may not be a factor which boards consider in their decisions regarding suspension length.

2. Health and safety as management's prerogative

Decisions in this study were premised on the idea that management had adequately attended to health and safety, unless the employee could convince the board that this was not true. In this contest of persuasion, employers and employees discussed the sincerity of the employee's motives, the reasonableness of fearing danger in the circumstances, the imminent nature of the danger, the normality of the danger for the work, and the objective evidence of the danger. However, boards accepted some of these grounds and rejected others in establishing whether a hazard was present at the time of the refusal and whether the employee therefore had a right to have his or her penalty either overturned or reduced.

As expected, boards were unwilling to accept the employee's fears as the sole basis for a legitimate work refusal. A sincere employee belief was thus insufficient to affect the chances of having a penalty overturned, but did improve the chances of having a penalty reduced. However, contrary to the second hypothesis, boards did not rely on objective proof in making their decisions. Neither did they usually require that the danger construed be imminent for, or abnormal to, the work. However, none of the penalties was overturned in cases where the danger was considered normal, but all were overturned in cases where the danger was considered abnormal. In most decisions, the boards' biggest concern, reflecting the procedural requirements of the statutes, was the reasonableness of the employee's alleged fears. A reasonable fear, usually judged in relation to the fears of co-workers, improved the odds of getting a penalty either overturned or reduced. In contrast, an unreasonable fear eliminated any prospect of having a penalty overturned, but had no effect on the chances of having a penalty reduced. The absence of safety motives, as a basis for the refusal to work, also hurt the employee's chances of a full exoneration, even though these motives were frequently associated with safety-related issues such as understaffing and workplace temperature control.

Penalties were also more likely to be overturned or reduced in cases where a variety of health and safety conditions were simultaneously satisfied. The combination of a sincere and reasonable fear of danger, adequate report of this fear, and an inadequate management response to this fear improved the likelihood of getting a penalty either overturned or reduced. Objective evidence of danger and management contravention of the contract together increased the likelihood of a obtaining a full exoneration. In contrast, an unreasonable fear of hazards that were normal to the employee's work decreased the odds of having a penalty overturned rather than upheld.

The health and safety factors noted in this study were similar to those in Fortado, Travis, and Jennings' (1990), Gross and Greenfield's (1985), and Leslie's (1982) studies. The objective evidence, reasonableness of the employee's fears, and, to a lesser degree, normality of the danger were primary concerns of boards in all of these studies. The results of this study also suggest that these factors are important in affecting whether penalties are overturned or reduced, but this is only one interpretation of these results. It remains possible, for example, that decisions are justified in terms of statutory health and safety issues, perhaps primarily to satisfy the courts, when boards really base their decisions on other issues, such as the gravity of the insubordination offense. This interpretation is not, however, consistent with arbitrators' frequent failure to mention the occupational health and safety statutes in their decisions.

Health and safety do not always affect board decisions in the manner described in hypothesis two. The board suspension length variable is not, for example, associated with the health and safety variables. These results suggest that health and safety are not considered when boards decide on an appropriate length for a suspension. On the other hand, it remains feasible that the absence of any statistically significant findings for these variables reflects the small sample size (101 observations) in relation to the number of variables (36). Regression results for the 13 common factors do, in fact, show that two health and safety factors are associated with board choices of suspension length, once the number of variables has been reduced. These show that, as per hypothesis two, findings of objective evidence lead to shorter suspensions, in the absence of a finding that the employee had no reasonable cause to fear danger. However, they also show that most of the health and safety factors continue to show no statistically significant effects on board choices of suspension length, again suggesting the absence of any actual effects. This may be because other issues, such as the severity of management's original penalty, are the boards' dominant concerns in determining suspension lengths. A further unexpected result is that female employees with reasonable cause to fear danger receive longer suspensions, possibly indicating gender bias in board decision-making.

3. Obedience patterns in workplace relations

The employee's behaviour both during and prior to the refusal was considered in more than half the cases examined in this study, but the emphasis was on the reporting of the the employee's fears to management, as required by statute, rather than either the employee's work record or years of service. Nevertheless, these indications of loyalty and compliance with authority helped ensure less severe treatment for the employee, as compared to situations where these factors were not assessed. Long years of service and a good work record improved the employee's chances of getting a penalty either overturned or reduced. The employee's report of safety concerns to management increased the possibility of a full exoneration, but had no impact on the odds of having a penalty reduced. However, reports of safety concerns were often associated with genuine and reasonable safety motives together with a failure of management to investigate, and in these situations, the reporting of safety concerns increased the odds of securing either a reduced or an overturned penalty.

Recognition that the employee had not been loyal or obedient to the employer helped ensure tougher outcomes for the employee in relation to cases where no findings were made on these issues. A bad record lowered the odds of obtaining a lesser penalty, and short years of service with the employer made it certain a board would sustain management's original discipline. In addition, the absence of a clear report of safety concerns from employee to employer eliminated any prospect of full exoneration.

The boards' willingness to consider the employee's work record and years of service in this study are consistent with similar findings in Leslie's (1982) and Walters' (1991) studies of right to refuse unsafe work cases. The effects of work record and years of service on the odds of having a penalty reduced or overturned are also generally consistent with findings in studies of ordinary discipline cases (Bemmels 1988b, 1988c, 1990b, 1991a; Rogers and Helburn 1985; Thornicroft 1994). However, the results in this study contradict Ponak's (1986, 1987) findings that both long years of service and a good work record have no statistically significant effects on arbitrators' decisions in Albertan discharge cases. They are also partially inconsistent with Eden's (1993) findings that a good work record does, and years of service do not, have statistically significant effects on the odds of having a penalty upheld in adjudications of nonunion discipline cases in the Canadian federal jurisdiction. These findings may reflect the failure to use multivariate statistical techniques to control for the effects of other variables in Ponak's (1986, 1987) study and the focus on nonunion cases, where years of service may be poorly documented, in Eden's (1993) study. As a result, the implication of this and other studies is that, in accordance with hypothesis three, boards do assess the employee's general behaviour in the workplace when deciding whether to uphold a penalty imposed by management. Alternatively, boards may use the employee's general behaviour in the workplace to justify a decision made on some other basis. For instance, boards may reinstate employees whom they sympathetically view as otherwise unemployable, and may refer to the employee's good work record and years of service in an attempt to convince management of the potential for restoring an amicable relationship with the reinstated employee. However, even if this interpretation is correct, the example discussed above shows that mentioning the employee's overall behaviour may play an essential role in securing the parties' acquiescence to the decision.

Not all the results regarding the employee's general behaviour support the third hypothesis. Most findings regarding the employee's work record, years of service, and report of safety concerns have no statistically significant effect on board choices of suspension length. A good work record finding did nevertheless lead to shorter suspensions, as hypothesized, but a long years of service finding led to longer suspensions. This contradiction reflects high collinearity between the two variables, which, when captured through factor analysis, shows that the combination of good work record and long years of service results in unexpectedly longer suspensions. This result may reflect the small sample size and distorting influence of particular observations on the estimation of the coefficients. The influence diagnostics do, in fact, indicate that two observations have caused the T_SERV coefficient to be overestimated, suggesting that the actual coefficient is either negative, as expected, or smaller and perhaps statistically insignificant.

4. Unprofessional management conduct

Management's behaviour was scrutinized in more than one hundred cases analyzed in this study. Penalties were, by and large, less severe in cases where management was blamed for misconduct than in cases where management behaviour was not assessed.

Failure to respond to the employee's safety concerns, especially when these concerns were genuine, reasonable, and adequately articulated to management, dramatically increased the odds of having a penalty either reduced or overturned. An employer violation of the employee's contract had no impact, by itself, on the odds of obtaining a full exculpation or lesser penalty. Nevertheless, the additive effects of a contract violation and objective evidence of danger increased the odds of getting a penalty overturned. Inconsistent treatment from the employer actually decreased the odds of being fully exonerated, contrary to expectation, but this finding most likely reflects the fact that none of the employees mistreated in this fashion by management was motivated entirely or primarily by safety concerns in refusing to work. In contrast to these situations, appropriate management behaviour, if acknowledged by a board, helped ensure more severe penalties for the employee as compared to those cases where management behaviour was not examined. In cases where boards felt that management had not violated the employment contract, for example, all penalties were sustained. In cases where the board believed that management had not acted inconsistently, no penalties were overturned. On the other hand, management's fulfillment of its legal duty to investigate the employee's concerns by itself had no bearing on whether the penalties were either reduced or overturned. When female employees were involved, however, an adequate investigation by management reduced the likelihood of being fully exonerated.

Indications of management misconduct also affect board choices of suspension length in the hypothesized manner. Specifically, there were shorter suspensions whenever management failed to investigate the employee's safety concerns. However, the other elements of management misconduct had no effect on board decisions regarding suspensions length.

In aggregate, the results suggest that the management misconduct variables really are considered in board decisions, as indicated in hypothesis four. Nevertheless, this is not the only possible explanation for the observed relationships. Arbitration and labour relations boards may refer to management behaviour, not because of its importance to the case, but because justifying their decisions on that basis may be easier than justifying them on the basis of the merits of discipline or health and and safety issues. For instance, upper management may be unwilling to accept that a case was lost because an employee had a legitimate right to disobey an order for safety reasons, but may be willing to accept that a case was lost because lower management did not investigate the employee's concerns. However, even this approach is consistent with the the underlying idea of hypothesis four, that all sides believe that management authority should be exercised fairly and with regard to due process.

5. Controls

Several of the control factors do affect board decisions. Arbitration boards were less likely to overturn and more likely to modify penalties and impose longer suspensions than labour relations boards. Employees who had been dismissed were more likely to obtain full reinstatement or a lesser penalty than employees who had received some penalty other than a dismissal or suspension, and were more likely to obtain a lesser penalty than employees who had been suspended. Employees who had been suspended were more likely to obtain lesser penalties than employees who had received some penalty other than a dismissal or suspension. In cases where dismissals were reduced to suspensions, some or all of the delay from the refusal to the award was typically chosen to be the suspension, so that employees were reinstated with little or no back pay. Penalties were more likely to be overturned when both parties retained an attorney, and less likely to be reduced when only the employee retained an attorney.

Implications

Implications for Employees

This study shows that employees punished for refusing to do their allegedly unsafe work are more (less) harshly treated when boards find them guilty (not guilty) of insubordination. An employee who refuses unsafe work should therefore avoid being overtly insubordinate as a way of minimizing the chances of discipline. This could mean protesting a work assignment, as some employees from the cases in the study successfully chose to do, rather than flatly refusing to do it. It could also mean selectively refusing to perform unsafe aspects of one's job, another common practice, while indicating an availability and readiness to perform safe aspects of the same job or other jobs. It could also mean a more polite and respectful manner when communicating a refusal to do work, given the frequent board distaste for rudeness. In general, the employee should avoid acting in ways that would place the supervisor on the defensive and force him or her to issue an order as a means of re-establishing managerial authority.

This study also shows that boards uphold penalties on the presumption that management has made the workplace safe until the employee can prove otherwise. A sincere conviction that one's work is dangerous helps in getting a modified penalty, but has no effect on one's chances of escaping punishment completely. It is nevertheless important to show a genuine concern for safety, because boards treat employees severely when they have refused to work for reasons unrelated or loosely related to safety. This means that, in reporting their concerns to managers, employees should complain about the dangerous consequences of particular working conditions (i.e., frostbite caused by the cold weather) rather than the working conditions themselves (i.e., cold weather). However, full exoneration is unlikely to be granted without some strong indication that there was also reasonable cause to fear danger. To demonstrate the reasonableness of his or her fears, the employee should solicit the support of people familiar with the dangers of concern. This group might include the safety representative, the members of the health and safety committee, the shop steward, or the employee's co-workers. The employee should also try to show that the dangers feared are new to his or her work, because boards in the study often found it unreasonable to complain about dangers that had been previously tolerated as part of normal working conditions.

The results of this research show that full exoneration is much more likely when the employee has adequately reported his or her safety concerns to the manager-in-charge. Clear communication of these concerns has the obvious advantage of providing management with the opportunity to rectify the dangers, while also allowing the employee to convince management and possibly any other witnesses of the sincerity of his or her safety motives. Employees should know, however, that boards also consider work records and years of service when deciding to overturn or reduce management's original penalties, even though these factors are not directly relevant to work refusals. Workers with poor work records and short years of service may therefore wish to have their safety concerns addressed through a grievance procedure rather a work refusal procedure, because of the high risks of having penalties sustained.

Boards also make decisions that reflect their assessments of the appropriateness of management's behaviour. Employees and their legal and union advisors should therefore try to convince boards of the inappropriateness of this behaviour. Much of this focus should be on the inadequacy of management's investigation of employee complaints, especially since several of the boards in the study either overlooked this issue or decided that an oral response to employee complaints was sufficient to satisfy this statutory requirement.

Results show that the chances of having a penalty overturned are only 30%, so employees may prefer to have their safety concerns addressed through a grievance procedure, transfer request, or request for a ministry health and safety inspection as alternatives to a work refusal. However, there are always some serious dangers which should be averted immediately by refusing to work rather than by relying on other remedies that may come too late to protect the employee's health and safety. If employees do decide to refuse to do their work and are disciplined as a result, they should appeal these penalties to labour relations boards, where this option is available, because these boards are more likely to overturn penalties than arbitration boards. Employees should also more actively pursue an appeal when they have been dismissed rather than disciplined in some other way, again because of the greater chances of having a penalty either modified or overturned.

Implications for Management

The results of this study have many realistic, if sometimes morally questionable, implications for management. They show, for example, that management can improve the odds of having its penalties upheld by putting employees in the position of having to act in obviously insubordinate ways when they refuse to do their work. Management can accomplish this objective by ordering an employee back to work after an initial refusal and by explaining the punitive consequences of not following management orders. If the employee continues to refuse, management can then investigate the employee's safety concerns having clearly established that the employee was insubordinate.

Management need not prove that it has made the workplace safe. That onus rests entirely on the employee. However, management can improve the prospects of having its penalties upheld by trying to discredit the sincerity and reasonableness of the employee's health and safety motives. This might be accomplished by documenting the lack of safety concerns in employee explanations of a refusal to work and by seeking the informed opinions of managers, workers, and others acquainted with the dangers at issue in demonstrating that any genuine safety concerns were unreasonable.

Management can also improve the chances of having its penalties sustained by discrediting the employee as someone with a past history of bad relations with management or a limited commitment to the firm. This can be achieved by documenting the employee's years of service, all instances of indiscipline, and any punishments meted out, activities which many employers routinely perform anyway. As far as its own obligations are concerned, management should ensure that it treats each work refusal situation the same way to avoid later accusations of inconsistency, especially concerning the imposition of discipline. It should also try to avoid provoking a refusal by, for example, violating the employment contract. Most importantly, management should take the time to thoroughly investigate employee concerns, not just to fulfill this statutory requirement, but also to assess the reasonableness of the employee's beliefs as a precautionary measure in the event a disciplinary appeal reaches a board.

Management can also take other actions to help improve the chances of having its penalties upheld on appeal. It can impose minor penalties that are less likely to be overturned or modified than, for example, suspensions or dismissals. In addition, it can press for a hearing with an arbitration board as opposed to a labour relations board, simply because the former is less likely to overturn its penalties than the latter.

Implications for Policy-makers

This study has several findings which might be used to make better occuaptional health and safety policy. One important finding is that boards sometimes do not apply, and frequently apply only part, of the occupational health and safety legislation to right to refuse unsafe work cases. In fact, many arbitration boards, in particular, do not invoke the occupational health and safety legislation at all. This eschewal of the law may reflect the traditional arbitral preoccupations with interpreting collective agreements and preserving amicable relations between the parties. If policy-makers want arbitration boards to be more concerned and knowledgeable about broader public policy concerns, they should reconsider the ways in which board members are trained, licensed, and appointed. For instance, the various levels of government could require board members to take courses in occupational health and safety and in public law to qualify for compulsory certification as a new professional group. They could also end the traditional practice of allowing the parties to choose their own arbitrator by assigning this responsibility to the ministry of labour or health, in recognition that occupational health and safety is not exclusively a private matter between one union and one employer. However, if policy-makers wish to preserve the traditional private orientation of arbitration, they could follow the Manitoba, Newfoundland, Ontario, and federal governments in allowing the parties to appeal their health and safety disputes to a labour relations board. Labour relations boards already follow statutory procedures to a large degree, because these procedures are the sole source of their authority. Additional initiatives could involve educational programs to teach employers and employees about their occupational health and safety rights, so that these issues are raised more frequently and forcefully at the arbitration and labour relations board hearings.

In addition to possible enforcement problems, this study shows that the procedures and precedential conditions outlined in the present legislation may provide workers with insufficient protection from disciplinary reprisals. It remains particularly difficult for the employee to prove that he or she had reasonable cause to believe that working was hazardous, when management can rely on the expert testimony of its company doctors, nurses, and engineers and on its objective measurements of health and safety effects in the workplace. It is easier for the employee to prove reasonable cause when other employees also feel the work is dangerous, but boards often treat the group work refusals spurred by such collective sentiments as illegal strikes. Policy-makers could eliminate these problems by allowing employees to refuse work solely on the basis of a genuine fear of danger, until a government inspector or health and safety committee had declared the work safe following some form of investigation. A fundamentally different approach, advaocated by Gross and Greenfield (1985), would place the onus of proving the work was safe on management. If management could carry this burden, the employee would then be required to show that he or she reasonably believed the work was unsafe. If the employee could not carry this burden, management would then be free to address the insubordination issue.

A new approach could lead to the greater use of unjustifiable work stoppages, motivated only by a desire to make management concede on issues unrelated to health and safety. However, predictions concerning this problem remain purely speculative, especially given the declining incidence of strikes in Canada. The real and more pressing problem, in urgent need of a solution, is the health and safety of Canadian workers.

Implications for Researchers

This study has several implications for the methods researchers employ in studying arbitration or labour relations board decisions. First, the bivariate measures of association used in some previous studies (Deitsch and Dilts 1989; Ponak 1986, 1987; Scott and Shadoan 1989; Zirkel 1983) do not provide an accurate indication of how much individual variables affect decisions, because these measures fail to control for other variables. In this study, for example, the genuine safety concern variable (T_SUBJ) was positively related to the odds of having a penalty overturned, until the effects of other variables, including reasonable belief (T_REAS), were held constant.

This study also demonstrates the importance of findings of fact in affecting decisions. However, many other studies of arbitration decisions fail to include these as explanatory variables. Instead, they focus on the effects of the grievor or arbitrator's gender (Bemmels 1988a, 1988b, 1988c, 1990a, 1990b, 1991a; Caudill and Oswald 1992, 1993; Rodgers and Helburn 1985), the retention of lawyers by the parties (Block and Stieber 1987), and the education (Heneman and Sandver 1983) or experience of the arbitrator (Bemmels 1991b; Holmes and Rogow 1990; Nelson and Curry 1981), factors which are extraneous to actual decisions. Findings of fact are generally limited to type of offense and 'mitigating factors', such as years of service and work record (Bemmels 1988b, 1988c, 1990b, 1991a; Eden 1993). Even these findings do not incorporate both positive and negative assessments, as in, for example, a bad work record versus a good work record (Bemmels 1988b, 1988c, 1990b, 1991a). As a result, other studies have probably overestimated the direct effects of factors, such as gender, on arbitration decisions.

This study also shows that the arbitration decision can be conceptualized in terms of three choices: to overturn, modify, or uphold management's penalty. Some studies (Eden 1993; Thornicroft 1994) analyze these decisions as either management 'wins' or 'losses', and therefore fail to distinguish the factors affecting the odds of having a penalty reduced rather than overturned. Other studies (Bemmels 1988a, 1988b, 1988c) examine all three decisions by comparing the odds of having a penalty overturned versus both reduced and upheld and then by comparing the odds of having a penalty reduced versus upheld, on the assumption that arbitrators make decisions in a two-step process involving entirely different factors at each step. However, this study shows that many of the same explanatory factors affect whether penalties are overturned and whether they are reduced, thus supporting the one-step, three-choice procedure modelled in this research.

Future research should also explore those dimensions of quasi-judicial decisions which were not investigated in this study. This might involve the use of new methodologies to study the dynamics of hearings. It might also entail the analysis of new variables to assess the effects of previously unaddressed findings and control conditions on board decisions. One such variable could account for the effects of organizational size, and another, the effects of union representation. In studies of right to refuse unsafe work cases, other variables could account for differences in the procedures or preceedential conditions outlined in the occupational health and safety statutes.

Conclusions

Management has the sole right to manage the workplace under common law. The right to refuse, now established in occupational health and safety legislation, nominally restricts this right by allowing workers to refuse work that is unsafe. Nevertheless, this study shows that the scope for refusing to work is limited, because workers must satisfy several rigid conditions to qualify for protection from discipline. For instance, they must prove that they had reasonable cause to fear danger or risk having boards uphold any discipline imposed by management. Boards do not, in contrast, require managers to justify their right to manage. As a result, boards have, perhaps unwittingly, endorsed an approach to occupational health and safety that stresses the maintenance of managerial control over the workplace rather than the protection of workers from harm. This approach is evident in the boards' examination of insubordination, length of service, and work record issues. It is also apparent in the boards' unwillingness to either exonerate workers who have refused to work for genuine safety reasons or address the matter of management culpability in making the workplace unsafe.

To some extent, board decisions simply reflect the procedural requirements outlined in the occupational health and safety legislation. Boards have, however, exercised their discretion in imposing more rigid requirements than those stipulated in the legislation. Ontario boards have, for example, demanded that employees objectively prove their work was dangerous or show that they had reasonable cause to fear danger, even though, in one prominent interpretation, the legislation only requires employees to show that they were genuinely concerned about safety (Beachvilime Ltd. 1981, 1 L.A.C. (2d) 22, Palmer). Boards have also examined issues which are omitted from the legislation, such as insubordination, length of service, and work record.

Boards can use their discretion to adopt a new approach to the right to refuse unsafe work, which recognizes the advantages of harnessing the experiential knowledge of workers in promoting efficiency and detecting and preventing hazards. This new approach rejects the idea, underlying the current conception of insubordination, that firms "are and must be traditional bureaucracies with clearly delineated chains of command and sharply-etched authority structures" because "the essential knowledge to prescribe employee behaviours in all domains .... resides exclusively with management." (Sacken 1991: 50). It also rejects the notion, underlying the current conception of health, that only scientific experts, such as doctors and engineers, have the knowledge required to assess whether work is unsafe (Navarro 1980; Sass 1987). Instead, the new approach is based on the idea that workplace conditions vary over time and space, and so universal scientific theories developed from static laboratory settings often have limited applicability to organizational efficiency or occupational health and safety. Experience with health and safety regulation shows, for example, that most injuries are caused by temporary conditions that could not have been foreseen by professional regulators (Mendeloff 1979). For this reason, managers and scientists cannot know the safety or efficiency implications of their decisions with any certainty. Workers, on the other hand, are frequently in a better position to observe the immediate consequences of decisions and take any corrective action necessary (Sass 1986a; 1986b).

The new approach to work refusals has two major implications for arbitration and labour relations board decisions. The first is that unjustified work refusals should not be regarded as insubordination events that permanently undermine management's plans to achieve optimal efficiency, and should instead be treated as work avoidance tactics that temporarily disrupt production. Boards should therefore no longer assume that blindly following orders ensures efficiency, when managers are frequently too distant from the shopfloor to know what is efficient or not. The second implication is that work refusals are justified when the employee genuinely seeks to improve some aspect of his or her work situation, including safety, because of some knowledge acquired while on the job. Boards should realize that employees have knowledge of their work, which managers do not have, that may prove useful in rectifying particular problems, including workplace hazards. In following this advice, boards can help build a bridge between management and labour that would lead to information-sharing advantages in all aspects of organizational life.

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